Reviewed: 9/29/93
Recommend: H
G. Ferreira

PRELIMINARY ASSESSMENT

IDEAL PLATING AND POLISHING COMPANY, INC.

BELLEVILLE, ESSEX COUNTY

EPA ID NO. NJD087280038

New Jersey Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Field Operations - Site Assessment Section

IDEAL PLATING AND POLISHING COMPANY, INC.
681 MAIN STREET
BELLEVILLE, ESSEX COUNTY, NEW JERSEY
EPA ID NO. NJD087280038

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NARRATIVE

PRELIMINARY ASSESSMENT REPORT

PART I: GENERAL INFORMATION

Site Name: Ideal Plating and Polishing Company, Inc.
AKa: Belleville Industrial Center
Address: 681 Main Street
Municipality: Belleville **State:** NJ **Zip Code:** 07109
County: Essex
EPA ID No.: NJD087280038
Block: 108 **Lot:** 20
Latitude: 40° 48′ 24" **Longitude:** 74° 08′ 26"
Acreage: 15 **SIC Code:** 3471 (Plating/Polishing)

Current Owner: Belleville Industrial Center
Mailing Address: 681 Main Street
City: Belleville **State:** NJ **Zip Code:** 07109
Telephone No.: (201) 751-0360
Block: 56 **Lot(s):** 5, 6, 7, 9, 31
Block: 108 **Lot(s):** 10, 12, 20, 50, 60, 62

Current Operator: Ideal Plating and Polishing Company, Inc.
Mailing Address: 681 Main Street, P.O. Box 100
City: Belleville **State:** NJ **Zip Code:** 07109

Owner/Operator History:

NAME	OPERATOR OWNER	DATES FROM	TO
Belleville Industrial Center	Owner	7/2/68	Present
Air Reduction Co. (A New York Corp.)	Owner	12/30/66	7/2/68
Cumberland Chemical Co. (A Delaware Corp.)	Owner	4/30/62	12/30/66
Textron Corp. (A Delaware Corp.)	Owner	3/23/60	4/30/62
Main Street Corporation	Owner	?	3/23/60

Surrounding Land Use (zoning, adjacent properties):

Mixed industrial/commercial/residential zoning. Residential units are directly adjacent to the site.

Distance to Nearest Residence: Adjacent
Direction: North

Population Density (residents per square mile): There are 10,230 residents per square mile per the 1990 census data.

PART II: SITE OPERATIONS

Discuss all current and past operations at the site.

Ideal Plating and Polishing Company, Inc. (Ideal), is located within the Belleville Industrial Center (The Center). Ideal's 1992 annual corporate report lists Norman A. Cohen of 149 Kearny Avenue in Perth Amboy as its registered agent and Ronald Knigge as a corporate officer. The annual report for The Center confirms that it has been a New Jersey corporation since June 6, 1968 and that Lynn Clurman is a corporate officer and registered agent.

The blocks and lots which comprise The Center were formerly the site of an artificial leather and fabric dying factory called Federal Leather Co. Inc. (Federal). Based on the A. H. Mueller Co. Map dated 1906 and the State of New Jersey Industrial Directory for Essex County (NJID) dated 1931, the site was farmland owned by the Schaeffer family in 1906. According to "The History of Belleville", written by Richard Shafter, Federal founded the industrial site at the former Schaeffer property in 1916. The Mueller Map shows that Block 108, Lot 100 and 35 (now adjacent to Ideal) was being developed into the Sonnenborn Sons, Inc. "chemical works". The History of Belleville states that the Sonnenborn facility was involved in the production of paints, industrial finishes, white oil, petrolatums, floor hardeners and waterproofing agents. The book also states that the Federal facility was originally a leather tanning facility until it added the production of artificial leather in 1922. When the facility was destroyed during a 1924 fire, it was rebuilt and exclusively devoted to the production of artificial leather.

The 1938 Sanborn Company Insurance Map of Belleville shows that Federal covered all of Block 56, Lots 5, 6, 7, 9 and 31. The Sanborn Map shows that Federal contained a foundry, a wire rope factory, numerous solvent/fuel/naphtha tanks, a dye grinding shop, a lacquer storage facility, a varnishing and drying shop, a dope mixing shop, a chemical storage area, a dye house and a solvent recovery shop. A 1950 Sanborn Map of the Federal site documents that the facility had expanded into Block 108, Lots 10, 12, 20, 50, 60 and 62 by 1950, as supported by the New Jersey Department of Environmental Protection and Energy's (NJDEPE) Bureau of Field Operations - Site Assessment (BFO-SA) observations of aerial photographs dated April 7, 1951. The 1959 NJID lists Federal Industries, a Division of Textron Inc., at the same address as Federal and sharing the same company principals. The NJID indicated that Federal Industries produced the same products as Federal. By 1962, Federal was no longer listed in the NJID, and in 1963, Federal Industries became a division of Air Reduction Co. (ARC). In the 1964 NJID, another division of ARC, Airco Plastic Products, was operating at the same address as Federal Industries, and was listed as producing the same products plus injection molded vinyl parts. By 1967, Federal Industries was no longer listed in the NJID, and Airco Plastic Products was replaced by Airco Chemicals and Plastics. The 1968 deed for the property documents

that ARC sold the site to the Belleville Industrial Center.

During a July 19, 1993 site investigation by BFO-SA, Captain Vicari of the Belleville Fire Department (BFD) stated that he was aware of a number of fires at the Federal facility during the 1960s. He recalled one relatively serious fire which occurred in a drying room and was accelerated by volatile compounds used in the process. Captain Vicari also stated that methyl ethyl ketone was dumped by employees who used the substance to wash parts. Files to support Captain Vicari's recollections were not viewed by BFO-SA personnel. However, files from the 1980s documented spills and fires at the site as follows: a March 20, 1980 report of fire at Synfax Manufacturing Co. which involved a "isoparaffinic petroleum solvent"; a June 29, 1981 report of fire at Ideal Plating and Polishing Co. involving three polypropylene vats, one of which was empty (contents of other two not discussed); a June 13, 1983 report of fire involving a wooden structure 100 feet east of building #36. The report noted that "young boys" were seen playing in the facility.; a June 20, 1983 letter which states that a fire department task force had inspected The Center and that BFD personnel had issued violation notices to The Center; and, an October 7, 1987 report of a diesel fuel spill at The Center which was absorbed with two bags of Speedy Dry.

The Center leases buildings to a variety of industries. Some of the former or current tenants have files with BFO. A partial list of current and former tenants are as follows: Display Corp.; Synfax Mfg. Inc.; Helion Industries, Inc.; G.E. Richards Graphic Supply; Techna Corporation; Compustruct, Inc.; Renaissance Flowers; Sun Chemical; Hytest; Tech Finishing Co.; and, Costa's Cabinets. On January 2, 1991, two soil borings of twenty feet each were completed at The Center.

Ideal has operated at building #40 within The Center since February 1979. The 1990 Business Journal's Directory stated that Ideal had sales between one and five million dollars in 1990 and that the president of Ideal was Mr. Ron Knigge. The 1992 Corfacts Directory of Manufacturing noted that a related facility, called Independence Plating, is operated in Paterson and engaged in the electroplating of aerospace and computer parts. The noted directory also lists Ideal as providing electroplating services for aerospace and computer industries. The New Jersey Industrial Directory indicates that Mr. Knigge became president of Independence Plating in 1985.

The Right to Know survey submitted by Ideal on February 16, 1993 states that the company has ten employees. The noted survey lists hazardous substances stored on site in terms of daily averages by weight. A partial list of same is as follows:

Material	Weight
Sodium Cyanide	100 - 1,000 lbs.
Cadmium Cyanide	100 - 1,000 lbs.
Copper Cyanide	10 - 100 lbs.
Silver Cyanide	10 - 100 lbs.
Potassium Cyanide	100 - 1,000 lbs.
Potassium Hydroxide	100 - 1,000 lbs.
Chromic Acid	10 - 100 lbs.
Acrylic Acid	100 - 1,000 lbs.
Hydrofluoric Acid	100 - 1,000 lbs.
Hydrochloric Acid	1,000 - 10,000 lbs.
Sulfuric Acid	100 - 1,000 lbs.
Phosphoric Acid	100 - 1,000 lbs.
Ethyl Diamine	10 - 100 lbs.
Methyl Alcohol	1,000 - 10,000 lbs.
Ammonium Fluoride	100 - 1,000 lbs.
Nickel Salts	1,000 - 10,000 lbs.

The NJDEPE's files on Ideal begin with the October 3, 1979 inspection of the facility by the Bureau of Air Pollution Control (BAP). Observations during that inspection led to the issuance of a December 17, 1979 Order to cease the use of air pollution control equipment without a certificate. In part, the Order noted the venting of a perchloroethylene vapor degreaser as a violation. On June 25, 1980, certificates were issued to Ideal by NJDEP. However, on January 26, 1984, Orders were again issued to Ideal by BAP for operating the vapor degreaser without the necessary certificate. Subsequent to observations during an August 10, 1984 field investigation by BAP personnel, an August 27, 1984 Notice of Prosecution (NOP) was issued to Ideal for the vapor degreaser violation. An October 5, 1984 investigation by BAP indicated that Ideal had substituted 1,1,1-trichloroethane in their degreaser.

After a March 8, 1985 letter from BAP disapproved Ideal's application to operate the perchloroethylene degreaser, an April 17, 1985 inspection by BAP revealed that Ideal had discontinued use of the degreaser and substituted an alkaline water based cleaning solution in its place. Inspections on November 11, 1991 and February 3, 1993 did not reveal violations by Ideal of air pollution regulations.

The BFO Metro Field Office (BFO-M) hazardous waste file revealed that in 1980, Ideal had filed with the US Environmental Protection Agency (USEPA) as a generator of hazardous waste. The documents submitted to USEPA indicate that Ideal began operations on December 29, 1978 as an industrial electroplater "of electronic components, primarily precious metals such as Gold & Silver." At the time, Ideal reported that they generated wastes including spent non-halogenated solvents, xylene, methyl alcohol and cyanide plating baths. However, the documents also note that Ideal intended to phase out cyanide related effluent.

In a November 15, 1982 letter from BFO-M, Ideal was notified that it must submit a hazardous waste annual report for its activities as a hazardous waste treatment, storage and disposal facility. An inspection by BFO-M on April 30, 1986 revealed that Ideal discharged all of its wastes to Passaic Valley Sewerage Commissioners (PVSC) pursuant to a valid permit and therefore should not be subject to hazardous waste generator and treatment requirements. By memo dated May 18, 1988, NJDEP's Bureau of Hazardous Waste Engineering indicated that it was prepared to exempt Ideal from hazardous waste regulations if said facility was declared an industrial waste management facility pursuant to N.J.A.C. 7:14A-4 et seq. Ideal submitted a notice of exemption to NJDEP for the 1990 reporting period for hazardous waste activities due to a lack of waste generated. In a letter dated June 29, 1991, Ideal notified NJDEP and PVSC of the levels of hazardous waste found in their wastewater. By memo dated August 13, 1991, NJDEPE concluded that Ideal should not be regulated pursuant to N.J.A.C. 7:26-1 et seq. The same memo describes the cyanide destruction treatment which all cyanide wastewaters from Ideal undergo prior to discharge to PVSC.

By letter dated September 14, 1992, BFO-SA requested that Ideal conduct an investigation of the facility and property it controls. By letter dated October 14, 1992, Ideal informed BFO-SA that there have been no discharges or violations at the facility and they would therefore not conduct a investigation.

On June 7, 1993, an inspection of Ideal was conducted by BFO-SA. Touring the site with BFO-SA was the Chemist for Ideal, Mr. Vincent Elkind, who described the origin and destination of waste streams produced by Ideal and who provided the undated portion of a Sanborn Map of the facility. Mr. Elkind stated that in terms of the waste stream produced by the facility, the predominant contaminants are tin, lead, copper and nickel. The minor components of the waste stream are zinc, cadmium, silver, gold and chromium. Per Mr.

Elkind, raw materials as noted above are mixed in open vats to produce numerous plating solutions, or pre-mixed solutions are simply added to the vats. Metallic parts are then dipped into the vats to achieve a plated product. As the parts are retrieved from the vats, solution is dripped on floors and various appurtenances to the production line. Any such dripping or other spills which do not evaporate will flow to a central trench which runs most of the length of building #40. The trench, which is partially filled with a fine, light colored precipitate from production, has never been inspected or cleaned since the start of operations according to Mr. Elkind. Limited probing of the trench with an auger indicated that the trench bottom was corroded but intact. Per Mr. Elkind, all waste solutions are discharged to the trench, which passes through a concrete pit prior to discharge to the Passaic Valley Sewerage Commissioner's facility (PVSC). In accordance with the PVSC discharge permit, the pit is sampled by automated devices for metals, pH, cyanide and other parameters. Mr. Elkind stated that Ideal was in compliance with the noted permit and that no other wastes are generated. This assertion is supported by Mr. Tom Mack, of PVSC, who stated that Ideal was not a problem facility.

Also observed during the noted inspection, in the southernmost portion of building #40, was an open drum of hydrochloric acid at a section of a badly corroded concrete floor which still seemed intact. BFO-SA personnel also observed a green solution which had flooded a section of the floor due to a spill of nickel solution from a ruptured drum. The spill had entered building 39A which contained a drum of potassium cyanide. Outside the facility, four full drums were observed at the site of a oil spill to macadam. Of the four drums, only one was marked. The noted drum, which was covered in oil, had "slushing oil" scrawled on it. At the southern extent of building #40, a spill of automotive waste oil to soil was observed at the fence which separates The Center from the railroad tracks. Oil filters were observed on both sides of the fence. Finally, a powder-like particulate was observed in a graveled lot between building #40 and a quonset hut.

During the July 19, 1993 inspection by BFO-SA, the graveled lot next to the quonset hut was observed again as were soils at other locations. It was noted that the soils in other locations contained a large amount of dry, very fine particulates with no cohesion. A conversation with Mr. Elkind and Mr. Thompson of Ideal during the July 19, 1993 inspection did not explain how Ideal obtained an underground storage tank number, although they speculated that it may be for the above noted concrete pit. Mr. Elkind stated that one of the courtyards between building #40 and building #42 could only be accessed by a window and that the large one was accessible by a door.

Inspection of the large courtyard revealed that it was graveled, but had 2 inches of leaf litter over most areas. A number of empty blue plastic jugs and numerous empty 5 gallon roof tar pails were strewn in the courtyard, some partially covered with leaf litter. One of the blue plastic jugs bore Ideal's name. Two unmarked drums

were observed next to a cast iron grated drain in the middle of the courtyard. A 1 inch diameter steel pipe was observed with it's discharge end oriented down through the grate. The pipe extended from the grate to the eastern wall of building #40 and extended hence along said wall towards the north end of building #40 for about 30 feet at which point it ended with a 90 degree turn upward and the last fitting being half of a union. Approximately 20 feet north of the end of the noted pipe, a larger steel pipe extended from Ideal and was oriented downward. Another pipe was observed extending from a building between Ideal and building #42. This pipe was 1 inch in diameter, was oriented downward and was discharging a colorless liquid with no odor. Five small test pits were dug by shovel in the courtyard. One was located in the drain and encountered 2 feet of leaf litter and soil before encountering a green/blue material and a tan, grease-like substance in the last 3 inches above the flat, hard bottom of the drain. Directly next to the drain, an empty 55 gallon drum lay on its side. Under the drum, the soil and gravel was observed to have a green/blue color. The other location where green/blue color was observed was near the door which led into Ideal. In one location examined, the leaf litter was absent and the soil was dry. The soil associated with this dry spot was powder-like and not cohesive.

During the July 19, 1993 inspection, BFO-SA personnel interviewed Mary Quartarolo, Property Manager for the Arbor Hills residential units adjacent to The Center. According to Ms. Quartarolo, the entire residential property is owned by 432 Owners Inc. which retains Ms. Quartarolo's employer, Wellsley Property Management, Inc. to manage the common grounds of the property. Ms. Quartarolo stated that the site was developed into apartments about 20 years ago and changed to privately owned co-ops about six years ago. The aerial photograph observations by BFO-SA revealed that condominiums were built on the Sonnenborn site between May 14, 1971 and 1974.

Finally, a sketch was viewed during the July 19, 1993 inspection. The sketch (a site plan for The Center) was dated July 10, 1968 and drawn by J. Thomas Camlet & Sons of Clinton, New Jersey. It depicted a pump house on the east side of Main Street and made the following statement: "agreement for use of Passaic River water four outlet sewers to Passaic River."

PART III: PERMITS

A. NJPDES

There is no NJPDES permit listed for this facility.

B. New Jersey Air Pollution Control Certificates

Plant ID No.: 05980
No. of Certificates: Two: 046977 & 046978
Equipment Permitted: Seven Exhaust Fans

C. BUST Registration

NJDEPE's Bureau of Underground Storage Tanks (BUST) records a tank registration number of 0150077 for Ideal, but records show that Ideal has no tanks. A BUST representative has explained that this is most likely due to the registration of non-regulated tank(s) by Ideal.

D. Other Permits

Agency Issuing Permit	Type of Permit	Permit No.	Date Issued	Expiration Date
Passaic Valley Regional Sewerage Commissioners	Industrial sewer discharge	01403600	10/20/86	Current

PART IV: GROUNDWATER ROUTE

A. HYDROGEOLOGY

Describe geologic formations and aquifer(s) of concern. Include interconnections, confining layers, discontinuities, composition and permeability.

The site lies within the Piedmont Plateau, of the Appalachian Province. The Piedmont Plateau becomes a plain as it approaches the Essex County area, and in the vicinity of Belleville, it falls to sea level. The subject site is approximately 1,100 feet from the Passaic River and lies on a slope of approximately 5 percent. It is between 20 and 60 feet in elevation above mean sea level. The site is located in Belleville, which rests on three layers of sedimentary rock of Triassic age which are collectively known as the Newark Group. The Brunswick Formation, which is the uppermost layer, is predominated by red shale but includes sandstone and conglomerate. Prior to the last set of glacial advances into New Jersey, faulting of the Newark group created numerous ridges. The erosion of these features produced a system of valleys. During the Pleistocene glacial advances, vast amounts of glacial and fluvial sediments were deposited in these valleys, creating the unconsolidated deposits which have been described along the Passaic river adjacent to Ideal. The sediments, which are composed of clay, sands, gravel and boulders, can be found in stratified or unstratified conditions. Overlying this glacial drift in some areas are recent alluvial deposits or meadow mat. At the site, BFO-SA personnel observed silt to very fine sands at the surface. These soils would tend to have a relatively low permeability.

Depth to aquifer of concern: 20 feet
Thickness of aquifer: Unknown
Direction of groundwater flow: East
Karst (Y/N): No
Wellhead Protection Area (Y/N): No

B. MONITORING WELL INFORMATION

Although two borings were completed at this site, there are no monitor wells installed at this site.

C. POTABLE WELL INFORMATION

Identify all public supply wells within 4 miles of the site:

Water Company	Distance from site (miles)	Depth (feet)	Formation
Bloomfield Town	2.7	380	Brunswick
Wallington Boro	3.6	400	"
Wallington Boro	3.5	503	"
Wallington Boro	3.5	504	"
Montclair Town	3.7	300	"
Montclair Town	3.8	300	"
Glen Ridge Water Department	3.3	400	"

Discuss private potable well use within 4 miles of the site. Include depth, formation and distance, if available.

Potable water within Belleville and Bloomfield is supplied by Newark which obtains its water from the Pequannock system of reservoirs. Potable water used in Glen Ridge and Montclair is from the above noted Montclair wells, which are within 4 miles of the subject site. Montclair also sells its treated water to the West Caldwell franchise of New Jersey American Water Company. Wallington Borough does not use its wells but has an agreement with The Passaic Valley Water Commission (PVWC). All PVWC water is derived from surface water. Mountainside Hospital in Glen Ridge also has a well which serves hospital staff and patients only. The well is approximately 350 feet deep.

Distance (mile)	Population
0 - 1/4	0
1/4 - 1/2	0
1/2 - 1	0
1 - 2	0
2 - 3	90,000
3 - 4	160,000

same as air #s

#s in AQ do not add up to these

Discuss any evidence of contaminated drinking water or wells closed due to contamination.

The Bloomfield well noted above is reportedly not in use due to unacceptable cloudiness. The Montclair wells are impacted by an unknown source of volatile organic compounds, but analytical monitoring has demonstrated that Montclair's treatment system achieves regulatory quality standards. The Glen Ridge well is not in use due to trichoroethylene contamination. The Mountainside

Sounds like very few wells are open.

well is impacted by trichloroethylene at concentrations below regulatory quality standards. All wells in Wallington Borough have been shut down due to trichloroethylene and tetrachloroethylene contamination. The Superintendent of Public Works in Wallington Borough stated that local officials suspect the contamination originated from sites other than the subject site.

Identify industrial/irrigational wells within the vicinity of the site. Include depth, formation, distance and direction, if available.

There are numerous industrial wells in the vicinity of this site. See map 5, Water Withdrawal Points.

D. POTENTIAL

Discuss the potential for groundwater contamination, including any other information concerning the groundwater contamination route.

Should discuss

Due to the actual impacts noted above, this field was not assessed.

PART V: SURFACE WATER ROUTE

A. SURFACE WATER

Does a migration pathway to surface water exist (Y/N):

Yes. Run-off from this facility can enter the Passaic River via storm drains.

Flood plain: greater than 500 years **Slope:** Five percent

Does contaminated groundwater discharge to surface water?
Unknown.

Identify known or potentially contaminated surface water bodies. Follow the pathway of the surface water and indicate all adjoining bodies of water along a route of 15 stream miles.

The site is adjacent to the Passaic River which has received discharges from many industrial and domestic sources since the beginning of the industrial revolution. The 1968 site plan noted in Part II of this report indicates that there were discharges from The Center to the Passaic. The Passaic River extends south for approximately 8 miles prior to discharging to Newark Bay. The Passaic is adjoined by the Second River near the boundary between Belleville and Newark.

Identify drinking water intakes within 15 miles downstream (or upstream in tidal areas) of the site. For each intake identify the distance from the point of surface water entry, the name of the supplier and population served.

According to the March 1992 Surface Water Intake Locations by the

Fisheries

NJDEPE's Bureau of Safe Drinking Water, there are no downstream surface water intakes in the Passaic River.

Briefly discuss surface water or sediment sampling conducted in relation to the site. Discuss visual observations if analytical data is not available (include date of observation). Include surface water body, sampling date, sampling agency or company, contaminant.

This review did not discover surface water or sediments sampling relative to this site.

Discuss the potential for surface water contamination, include any additional information concerning the surface water route.

Surface water contamination may occur during fires due to runoff, or due to spills to the storm drain system.

B. SENSITIVE ENVIRONMENTS Sen. env. Distance from site Wetlands frontage value if applicable

Identify all sensitive environments, including wetlands, along the 15 stream-mile pathway from the site:

According to the United States Fish and Wildlife Service Wetlands Inventory maps, the subject section of the Passaic River has estuarine intertidal flats and sub-tidal open water.

PART VI: AIR ROUTE

Discuss observed or potential air release.

There are cyanides and acids at Ideal which pose an air release threat in the event of a fire. There are vapors of methyl alcohol and various plating solutions which are discharged to the atmosphere daily under the noted BAC certificates.

Populations that reside within 4 miles of the site.

Distance (mile)	Population
0 - 1/4	2,500
1/4 - 1/2	5,000
1/2 - 1	10,000
1 - 2	40,000
2 - 3	90,000 ?
3 - 4	160,000 ?

Identify sensitive environments and wetland acreage within 1/2 mile of the site.

The site, which is adjacent to the Passaic River, could pose a threat to riverine and estuarine inhabitants of the river and its tidal flats.

Sen. env. Distance from site Acreage if wetland

PART VII: SOIL EXPOSURE

Describe soil type. Include soil series, makeup of the soil and permeability of the soil.

The surface soil in the Newark area is primarily comprised of glacially derived sediments. The soils at this site are tan to red and primarily a silt with very fine sand. This is indicative of weathered rock from the Brunswick Formation which has a low permeability.

Briefly discuss contaminants identified in the soil. Include sampling date, sampling agency or company, sample locations, depth and contaminant level.

There is no known soil sampling results.

If no soil sampling has been conducted, discuss areas of potentially contaminated soil, areas that are visually contaminated or results from soil gas surveys.

Surface soil has visual characteristics which indicate waste oil and plating bath spillage. In the case of the waste oil, automotive oil filters were observed in close proximity, supporting the conclusion that waste oil was discharged. In the case of the suspected plating bath discharges, the conclusion that discharges have occurred is based upon similar color and the presence of raw materials containers in the courtyard. The dust-like condition of the soil next to the quonset hut it suspected to be due to silt characteristics rather than indicative of sludge disposal.

Number of people that occupy residences or attend school or day care on or within 200 feet of the site: 600 people
Number of workers on or within 200 feet of the site: 150 workers
Nearest residence = ___ feet
Does a subsurface gas threat exist? (Y/N): No. Relative to the materials used by Ideal, the potential for such a threat does not exist.

PART VIII: DIRECT CONTACT

Describe accessibility of the site (fencing, site security, evidence of unauthorized entry).

The site is active and completely fenced, but a gate to the railroad tracks was observed to be open during the July 19, 1993 inspection. Unauthorized access to the site is likely in light of the noted June 13, 1983 fire report which documented "young boys" on-site.

Number of on-site employees: Ten

PART IX: FIRE AND EXPLOSION

Discuss all incidents on site which have involved a fire or explosion. Indicate the date of the incident and the materials involved.

There is one known incident of fire at Ideal as noted in Part II of this report as follows: June 29, 1981 report of fire at Ideal Plating and Polishing Co. involving three polypropylene vats, one of which was empty (contents of other two not discussed).

Discuss site conditions which indicate a potential exists for fire or explosion (reactivity, incompatibility, ignitability, storage practices, container condition).

The potential for fire is significant due to the presence of flammable substances and heating elements for plating solutions. This was the cause of the above noted 1981 fire.

PART X: ADDITIONAL CONSIDERATIONS

Discuss evidence of wildlife or vegetation that has been or could be potentially impacted by on-site operations. Include areas exhibiting stressed vegetation or damage to wildlife.

Aside from the potential surface water and estuarine species, the area (located in an industrial setting) has no wildlife, crop or forest environments to impact.

Determine if a contaminant on site displays bioaccumulative properties. Name all bioaccumulative substances that may impact the food chain.

There are no known bioaccumulative contaminants.

Discuss observed or potential damage to off-site property. Consider migration routes from the site to an off-site property via soil, air or runoff.

Aside from the threat of cyanide or other degeneration compounds to neighbors in the event of a fire or accident, Ideal does not pose a threat to damage off-site property via soil, air or runoff.

PART XI: PREVIOUS OR ONGOING REMEDIAL ACTIONS

Discuss for each media all previous and ongoing remedial activities at the site. Include why initiated, type of action, date and present status.

There have been no known remedial activities taken by Ideal.

PART XII: ENFORCEMENT ACTIONS

1. **Type of enforcement activity:** Order to cease operation of equipment without permit
   Issuing agent: Bureau of Air Pollution Control
   Date: December 17, 1979
   Description of Violation: operation of equipment without permit
   Followup activity: Certificates Issued

2. **Type of enforcement activity:** Order to cease operation of equipment without permit
   Issuing agent: Bureau of Air Pollution Control
   Date: January 26, 1984
   Description of Violation: operation of equipment without permit
   Followup activity: Process change by Ideal achieved compliance.

3. **Type of enforcement activity:** Notice of Prosecution for operating equipment without permit
   Issuing agent: Bureau of Air Pollution Control
   Date: August 27, 1984
   Description of Violation: operation of equipment without permit
   Followup activity: Penalty paid. No Further Action.

PART XIII: CONCLUSIONS AND RECOMMENDATIONS

Ideal has apparently contributed to soil contamination at The Center. The contamination appears to be limited to the courtyard, which is very isolated, and therefore the direct contact threat in this instance is very low. The apparent discharge to the courtyard drain would appear to be the most serious contamination threat.

However, it is suspected that more widespread contamination may exist at The Center and the neighboring Arbor Hills from the described industrial activities beginning at the early part of this century. It is therefore recommended that any site investigation sampling at Ideal proceed under a unified sampling event for The Center. It is also recommended that a Preliminary Assessment be conducted for the former L. Sonnenborn and Sons, Inc. site.

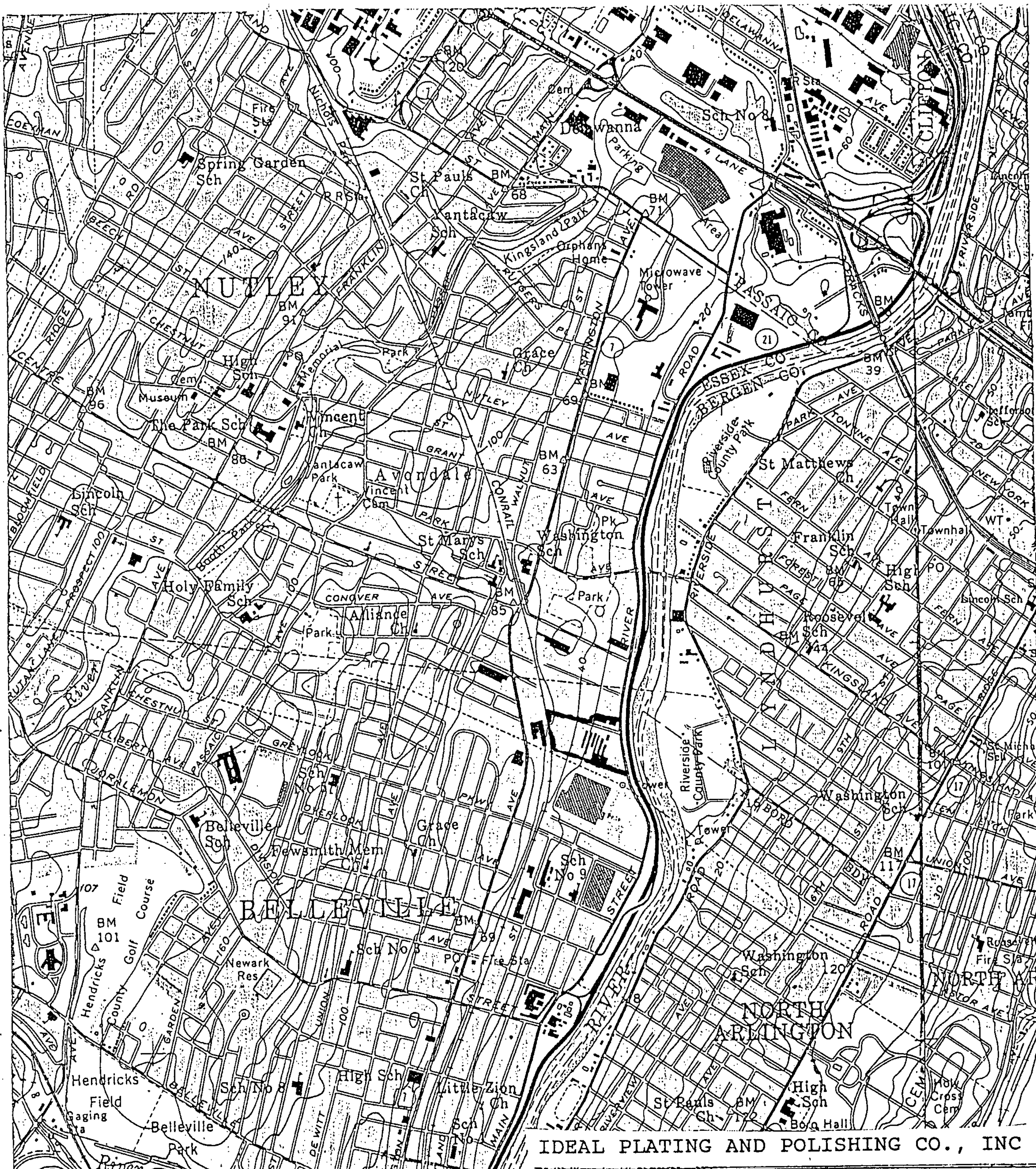
Put w/ Site Sheets

Submitted by: Nick Sodano
Title: Hazardous Site Mitigation Specialist II
NJDEPE, Bureau of Field Operations - Site Assessment Section
Date: July 28, 1993

PART XIV: POTENTIALLY RESPONSIBLE PARTIES

NAME	OWNER/OPERATOR/ KNOWN DISCHARGER	CURRENT ADDRESS
Ronald Knigge	Operator Known Discharger	681 Main Street Box 100 Belleville, NJ 07109
Lynn Clurman	Owner	681 Main Street Belleville, NJ 07109

MAPS



SCALE 1:24000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

DATUM IS MEAN SEA LEVEL

ORANGE, N. J.

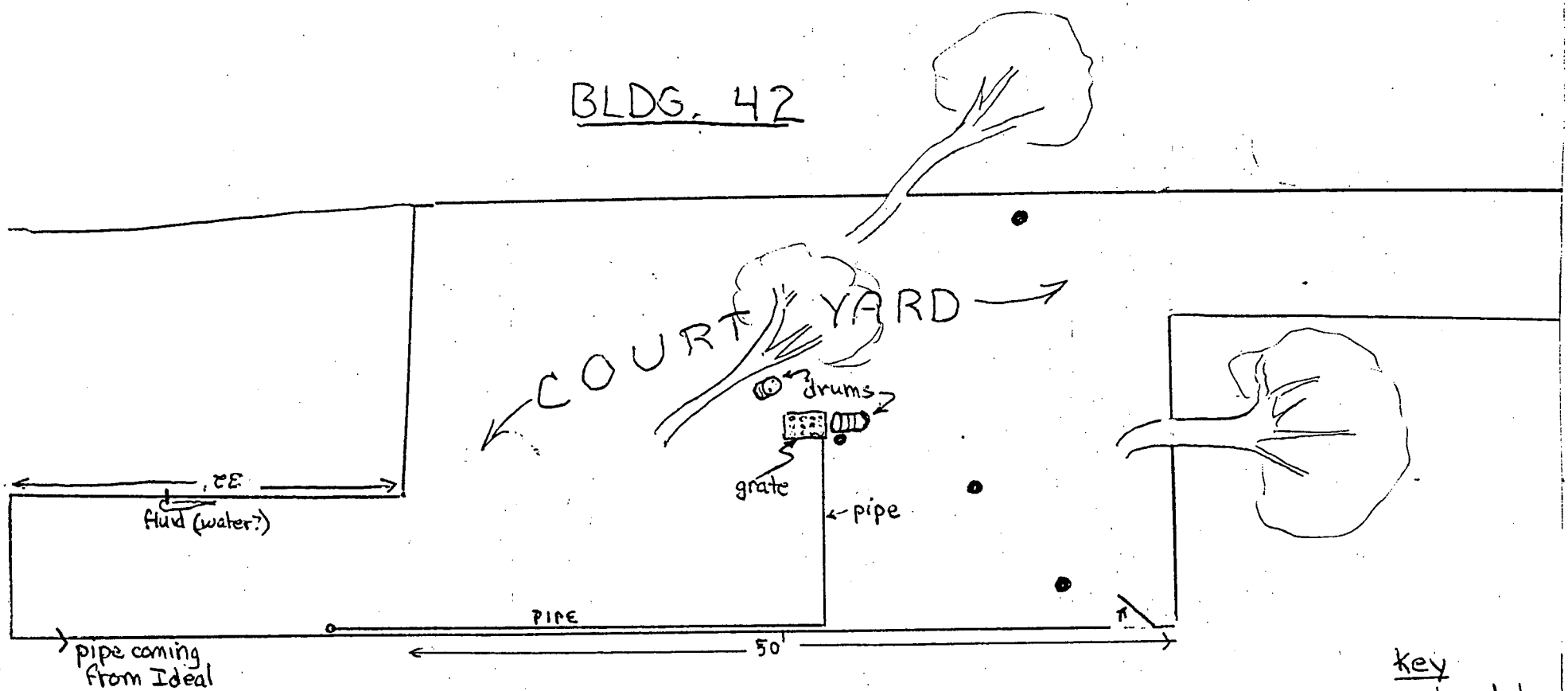
N4045—W7407.5/7.5

1955

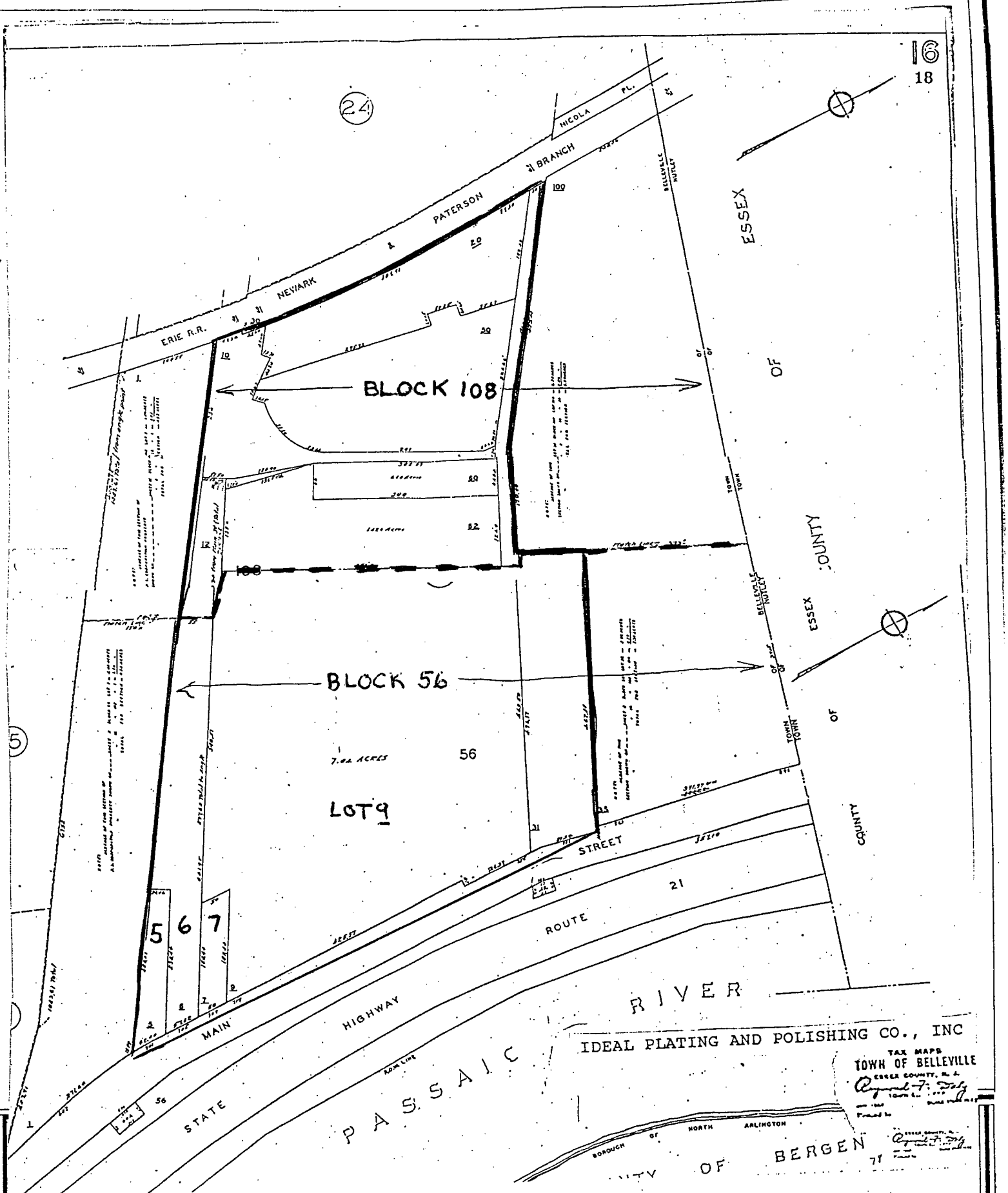
PHOTOREVISED 1981

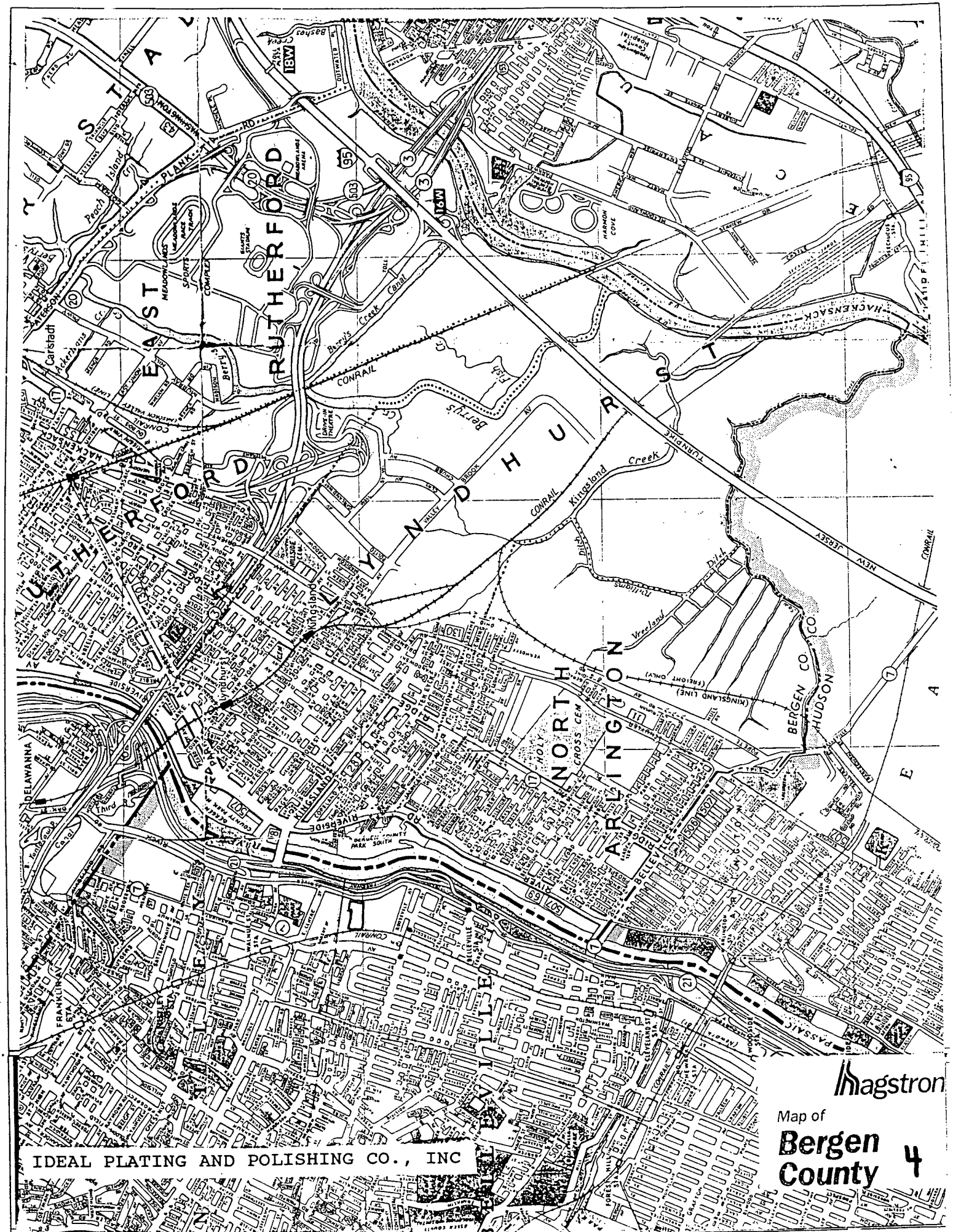
DMA 6165 I SW–SERIES V822

PATHMARK SUPERMARKET
ERIE-LACKAWANNA RAILROAD
CONDOS
Condominiums
IDEAL PLATING & POLISHING CO.
DATE: 6-7-93
Ideal Plating & Polishing Co.
MIL-SPEC. PLATING FOR THE ELECTRONICS INDUSTRY
DEREK W. THOMPSON
Plant Manager
P. O. BOX 100, 681 MAIN ST.
BELLEVILLE, NJ 07109
(201) 759-5559
IDEAL PLATING AND POLISHING CO. INC.
BUILDING 40
BLDG 40
office
LAB
NOT IDEAL PLATING
TRENCH
PAVED
SOIL
oil filters and oil
stain on pavement
deck
RADIUS 28950 ARC 433.51
CYCLONE FENCE
corroded Concrete
spill
drums
cyanide
soil + gravel
fireplug
B1
B2
COURT
Tecna corporation
G.E. Richards Graphics Supply
CYCLONE FENCE
S 52°37'E 477.09'
38
QUONSET BLDG.
656,000
42
1,966,000
42a
674,000
Belleville Industrial Center
2A



SKETCH OF THE COURTYARD AT
BLDG. 40 - IDEAL PLATING AND POLISHING
7-19-93 INSPECTION


16
18
24
NICOLA PL.
BRANCH
PATERSON
NEWARK
ERIE R.R.
BELLEVILLE
HUTLEY
ESSEX
OF
COUNTY
TOWN
BLOCK 108
108
BLOCK 56
7.08 ACRES
56
LOT 9
STREET
21
ROUTE
HIGHWAY
MAIN
STATE
5
6
7
RIVER
PASSAIC
IDEAL PLATING AND POLISHING CO., INC
TAX MAPS
TOWN OF BELLEVILLE
ESSEX COUNTY, N. J.
BOROUGH OF NORTH ARLINGTON
OF BERGEN
3

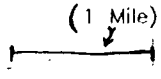

EAST RUTHERFORD
SOUTH HACKENSACK
LYNDHURST
NORTH ARLINGTON
KEARNY
HARRISON
Passaic River
Berrys Creek Canal
Kingsland Creek
CONRAIL
NEW JERSEY TURNPIKE
HACKENSACK
PASSAIC
HUDSON
BERGEN CO
IDEAL PLATING AND POLISHING CO., INC
Hagstrom
Map of
Bergen County
4

SUBJECT TO REVISION

WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF: IDEAL PLATING AND POLISHING CO., INC

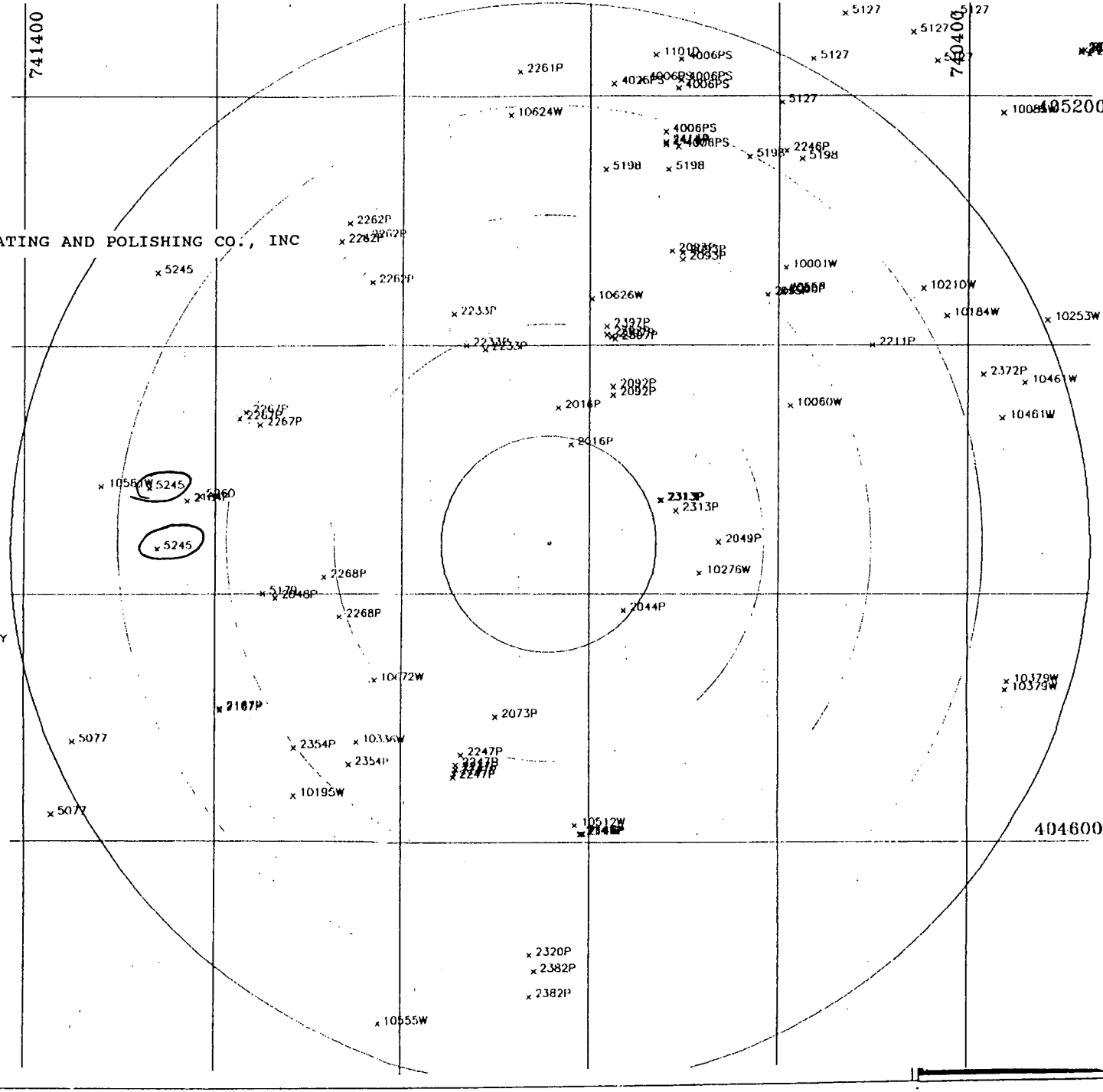
LATITUDE 404824
LONGITUDE 740826

DRAFT



× 100,000 GPD WATER WITHDRAWAL POINTS ONLY

1 MILE AND 5 MILE RADII INDICATED



PLOT PRODUCED BY:
NJDEPE
WATER SUPPLY ELEMENT
BUREAU OF WATER ALLOCATION
CN-426
TRENTON, NJ 08625

DATE: 06/16/93

95

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
10001W	SUN CHEMICAL CORP.		WELL #1	405037	740555	M	3.4	03	05	150	GTRB		150
	SUN CHEMICAL CORP.		WELL #2	405037	740555	M	3.4	03	05	280	GTRB		200
10060W	CARLSTADT - E. RUTHERFORD BOE	2603920	1	404931	740552	F	2.6	03	12	225	GTRB		125
10085W	TAKASAGO	2603466	#1	405152	740338	T	5.8	03	62	445			70
10184W	WORLD PLASTIC EXTRUDERS INC.	2603991	#1	405014	740413	T	4.2	03	37	200	GTRB		100
10195W	COLUMBUS HOSPITAL	2604664	#1	404622	741110	T	3.3	13	14	354	GTRB		160
10210W	THUMANN INC.	2604987	#1	405027	740428	T	4.2	03	05	300	GTRB		250
10253W	J. JOSEPHSON, INC.	2604379	WELL 1	405012	740310	T	5.1	03	59	400			125
10276W	BENEDICT-MILLER, INC	2603568	WELL 1	404810	740650	T	1.4	03	32	228			60
10336W	CLARA MAAS HOPSITAL	2603344	WELL 1	404648	741030	T	2.6	13	01	501			360
10379W	KEYSTONE METAL FINISHERS, INC.	2602297	2	404717	740335	T	4.4	17	09	150	GTRB		130
	KEYSTONE METAL FINISHERS, INC.	2604201	3	404713	740336	T	4.4	17	09	312	GTRB		300
10461W	CARLTON-COOKE PLATING CORP.	2602470	WELL 1	404942	740324		4.7	03	05				
	CARLTON-COOKE PLATING CORP.	2604253	WELL 2	404925	740338	T	4.4	03	05				
10512W	SWENSON CO., INC.	2602717	1	404608	740809	F	2.6	17	07	400	GTRB		150
10555W	NEW JERSEY BELL TELEPHONE	2603173	1	404433	741015		4.7	13	14	215	GTRB		80
10561W	HAHNE'S	2600118	2	404852	741312	F	4.2	13	13	350	GTRB		175
10624W	SWEPCO TUBE CORP.	2605011	1	405151	740851	S	4.0	31	02	300			200
10626W	FALSTROM COMPANY, INC.	2601494	1	405022	740759	T	2.3	31	07	300	GTRB		145
10672W	ROCHE DIAGNOSTIC SYSTEM	4600229	1	404718	741018		2.1	13	01	602	GTRB		60
	ROCHE DIAGNOSTIC SYSTEM	4600230	2	404718	741018		2.1	13	01	610	GTRB		200
1101D	FOSTER WHEELER PASSAIC, INC.			405220	740718		4.6	31	07	46	GD		175
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	1.3	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2601835	2	404930	740820		1.3	13	16	450	GTRB		150
	ITT AVIONICS DIVISION	2601905	3	404930	740820		1.3	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		0.9	13	16	500	GTRB		200
2044P	GRAND UNION CO.	4600002		404752	740738	S	0.9	03	39	300	GTRB		80
2048P	NATIONAL STARCH & CHEMICAL	2604314	1	404758	741122	T	2.6	13	02	410	GTRB		200
2049P	SIKA CORPORATION	2604036	1	404825	740638		1.6	03	32	302	GTRB		220
2055P	GANES CHEMICAL, INC.	4600080	2	405026	740557	F	3.2	03	05	490	GTRB		200
	GANES CHEMICAL, INC.	2600005	4	405024	740607	F	3.1	03	05	526	GTRB		80
	GANES CHEMICAL, INC.	2604277	5	405025	740557	F	3.2	03	05	430	GTRB		30
2057P	SPINNERIN YARN CO., INC.	4600177	0	405221	740250	U	6.7	03	59	404	GTRB		65
	SPINNERIN YARN CO., INC.	4600174	1	405222	740248	U	6.7	03	59	230	GTRB		120
	SPINNERIN YARN CO., INC.	2603018	3	405222	740250	U	6.7	03	59	400	GTRB		50
	SPINNERIN YARN CO., INC.	4600176	4	405220	740245	U	6.7	03	59	400	GTRB		140
	SPINNERIN YARN CO., INC.	2611599	5	405222	740248	U	6.7	03	59	455	GTRB		
2073P	ISP VAN DYK INC.	4600092	1	404700	740900	T	1.7	13	01	352	GTRB		100
	ISP VAN DYK INC.	4600093	2	404700	740900	T	1.7	13	01	400	GTRB		150
	ISP VAN DYK INC.	2605113	3	404700	740900	T	1.7	13	01	400	GTRB		150
2092P	GIVAUDAN-ROURE CORPORATION	4600006	6	404936	740745	F	1.5	31	02	297	GTRB		235
	GIVAUDAN-ROURE CORPORATION	4600007	7	404940	740745	F	1.6	31	02	250	GTRB		110
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405041	740701	F	2.9	03	12	580	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405044	740701	F	3.0	03	12	300	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405045	740708	F	2.9	03	12	470	GTRB		430
2141P	PFAFF TOOL & MANUFACTURING CO.	2602162	1	404604	740804	F	2.7	17	07	590	GTRB		175
	PFAFF TOOL & MANUFACTURING CO.	2602735	2	404604	740805	F	2.7	17	07	740	GTRB		140
	PFAFF TOOL & MANUFACTURING CO.	2604269	3	404604	740806	F	2.7	17	07	550	GTRB		155
	PFAFF TOOL & MANUFACTURING CO.	2604711	4	404604	740806	F	2.7	17	07	333	GTRB		
2167P	SCHERING PLOUGH CORPORATION	2600921	1	404704	741157		3.4	13	02	478	GTRB		160
	SCHERING PLOUGH CORPORATION	2604498	2	404703	741157		3.4	13	02	400	GTRB		130
2184P	MOUNTAINSIDE HOSPITAL	2602296	1	404845	741218	U	3.4	13	13	400	GTRB		350
2211P	HENKEL PROCESS CHEMICALS, INC.	4600125	1	405000	740500		3.5	03	05	170	GOSD		600
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	2.0	13	16	402	GTRB		100
			22	405015	740927	F	2.3	31	02	650	GTRB		260

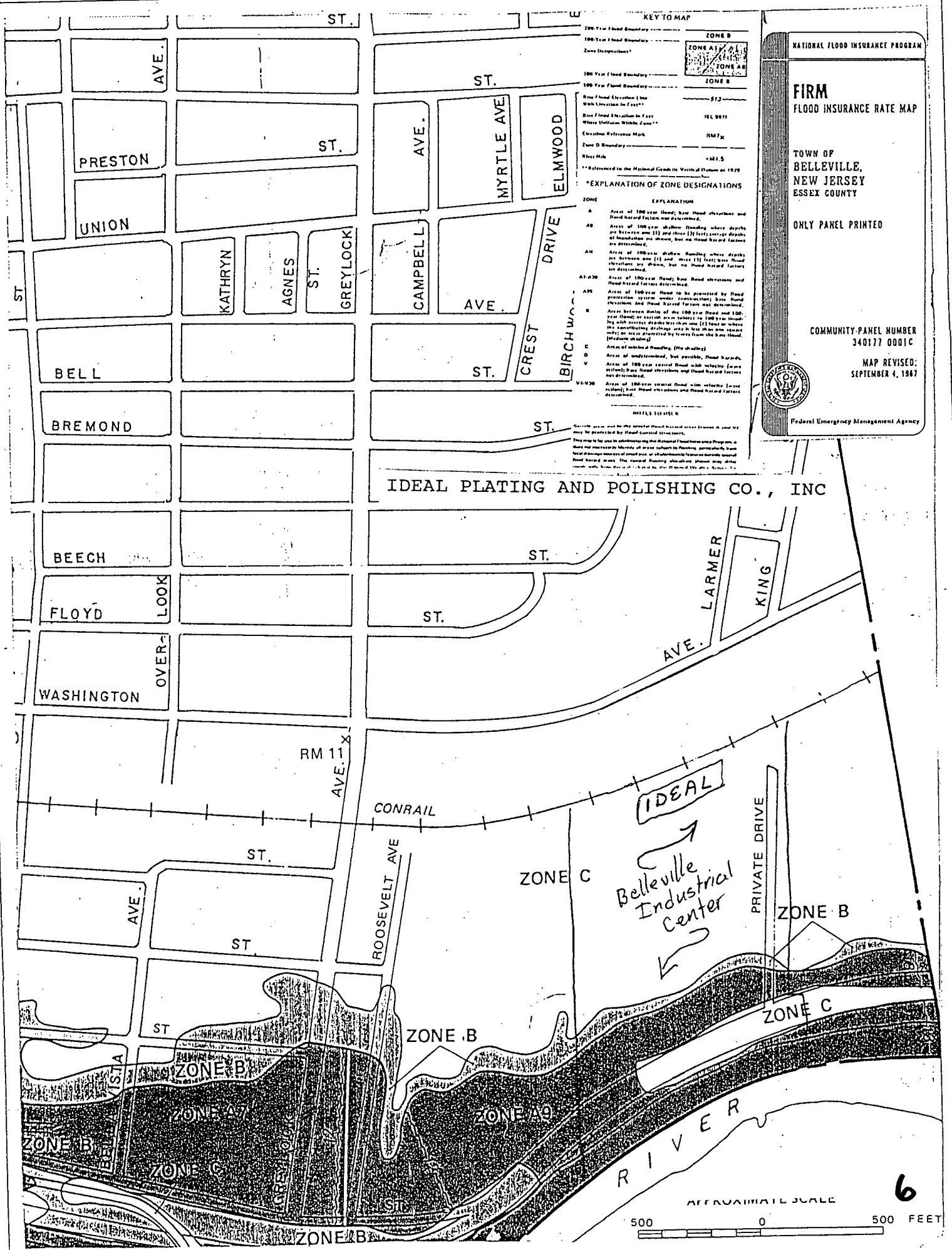
NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
	HOFFMANN-LAROCHE INC.	4600158	37	404958	740907	F	1.9	31	02	720	GTRB		300
2246P	FARMLAND DAIRIES INC.	2604169	1	405134	740555	U	4.2	03	65	600	GTRB		200
	FARMLAND DAIRIES INC.	2304250	2	405134	740555	U	4.2	03	65	500	GTRB		185
2247P	SETON COMPANY - LEATHER DIV.	4600160	2	404637	740925	F	2.2	13	14	300	GTRB		200
	SETON COMPANY - LEATHER DIV.	4600161	3	404635	740925	F	2.3	13	14	250	GTRB		75
	SETON COMPANY - LEATHER DIV.	4600162	4	404633	740926	F	2.3	13	14	200	GTRB		200
	SETON COMPANY - LEATHER DIV.	2604969	5	404631	740927	F	2.3	13	14	400	GTRB		500
	SETON COMPANY - LEATHER DIV.	2604968	6	404642	740922	F	2.1	13	14	400	GTRB		100
2261P	GIVAUDAN-ROURE CORPORATION	2602812	2	405212	740845	U	4.4	31	02	600	GTRB		218
2262P	UPPER MONTCLAIR COUNTRY CLUB	2601199	1	405052	741025		3.3	31	02	490	GTRB		90
	UPPER MONTCLAIR COUNTRY CLUB	2604390	2	405059	741035		3.5	13	02	335	GTRB		132
	UPPER MONTCLAIR COUNTRY CLUB	2604825	3	405030	741020	T	2.9	31	02	300	GTRB		60
	UPPER MONTCLAIR COUNTRY CLUB	POND	SW	405050	741040	T	3.4	13	02	12	GOSD		1100
2267P	GLEN RIDGE COUNTRY CLUB	2601852	1	404922	741132	S	2.9	13	02	353	GTRB		400
	GLEN RIDGE COUNTRY CLUB	2604134	2	404925	741145	S	3.1	13	02	300	GTRB		200
	GLEN RIDGE COUNTRY CLUB	4600168	3	404928	741141	F	3.1	13	08	400	GTRB		10
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	2.1	13	02	238	GTRB		60
	FOREST HILL FIELD CLUB	POND		404908	741051	F	2.1	13	02	14	SFLOW		1200
2313P	PENCO OF LYNDHURST INC.	4600172	1	404845	740714	F	1.1	03	32	267	GTRB		110
	PENCO OF LYNDHURST INC.	4600173	2	404845	740715	F	1.1	03	32	313	GTRB		185
	PENCO OF LYNDHURST INC.	2601699	4	404845	740715	F	1.1	03	32	410	GTRB		150
	PENCO OF LYNDHURST INC.	2603804	5	404840	740705	F	1.2	03	32	352	GTRB		185
2320P	KOTOW TRADING CORPORATION	4600182	1	404506	740838	S	3.8	17	07	500	GTRB		210
	KOTOW TRADING CORPORATION	2602384	2	404506	740838	S	3.8	17	07	700	GTRB		500
2354P	ESSEX COUNTY DEPT. OF PARKS	2604894	2	404645	741110	T	3.1	13	14	450	GTRB		180
	ESSEX COUNTY DEPT. OF PARKS	4600216	1	404637	741035	S	2.8	13	14	200	GTRB		240
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602067	1	404946	740350		4.3	03	05	303	GTRB		90
	YOO-HOO CHOCOLATE BEV. CORP.	2602933	2	404946	740350		4.3	03	05	393	GTRB		50
	YOO-HOO CHOCOLATE BEV. CORP.	2603053	3	404946	740350		4.3	03	05	378	GTRB		55
2382P	KARLSHAMNS USA, INC.	2604523	NORTH WELL	404446	740838	S	4.2	17	07	584	GTRB		500
	KARLSHAMNS USA, INC.	2604614	SOUTH WELL	404458	740835	F	3.9	17	07	615	GTRB		1000
2397P	SANDY ALEXANDER INC	2607737	1	405005	740749	S	2.0	31	02	400	GTRB		150
	SANDY ALEXANDER INC	2608396	4	405009	740749	S	2.1	31	02	400	GTRB		50
	SANDY ALEXANDER INC	2608398	2	405003	740744	S	2.0	31	02		GTRB		
	SANDY ALEXANDER INC	2608397	3	405004	740746	S	2.0	31	02		GTRB		
2416P	DYE-TEX CORP.	4600217	WELL NO 1	405137	740712	F	3.8	31	07	220	GTRB		250
	DYE-TEX CORP.	4600218	WELL NO 2	405138	740712	F	3.9	31	07	300	GTRB		350
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	WHIPPANY	405208	740727	T	4.4	31	02		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	CHELTON CO	405208	740702	T	4.5	31	02		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	T	4.0	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PASSAIC IN	405218	740702	T	4.6	31	02		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TUCK IND.	405136	740704	T	3.9	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	PANTASOTE	405204	740704	T	4.4	31	02		SP		
4025PS	KALAMA CHEMICAL, INC.	PASSAIC RIVER		405206	740745	T	4.3	03	21		SPPAS		
5077	ORANGE CITY	2604322	8	404648	741330	S	4.8	13	17	500	GTRB		600
	ORANGE CITY	2604444	9	404613	741343	F	5.3	13	17	506	GTRB		500
5127	PASSAIC VALLEY WATER COMMISSIO	4600068	ARNOT ST.	405240	740518		5.6	03	31	300	GTRB		160
	PASSAIC VALLEY WATER COMMISSIO	4600072	LAWRENCE	405217	740420	U	5.7	03	31	373	GTRB		500
	PASSAIC VALLEY WATER COMMISSIO	4600073	COLUMBIA	405240	740410	U	6.2	03	31	409	GTRB		375
	PASSAIC VALLEY WATER COMMISSIO	2601037	TERRACE	405157	740558		4.6	03	31	607	GTRB		190
	PASSAIC VALLEY WATER COMMISSIO	2601010	GARFIELD	405218	740538		5.1	03	31	459	GTRB		150
	PASSAIC VALLEY WATER COMMISSIO	2603183	CORABELLE	405231	740435		5.8	03	31	470	GTRB		200
5179	BLOOMFIELD TOWN	2604763	1	404800	741130	T	2.7	13	02	380	GTRB		330
5198	WALLINGTON BOROUGH	2603933	DUL	405131	740619		4.0	03	65	400	GTRB		140
	WALLINGTON BOROUGH	2603934	MAIN AVE	405130	740545	T	4.3	03	65	400	GTRB		150
	[illegible]	[illegible]	LESTER ST	405125	740710		3.6	03	65	400	GTRB		130

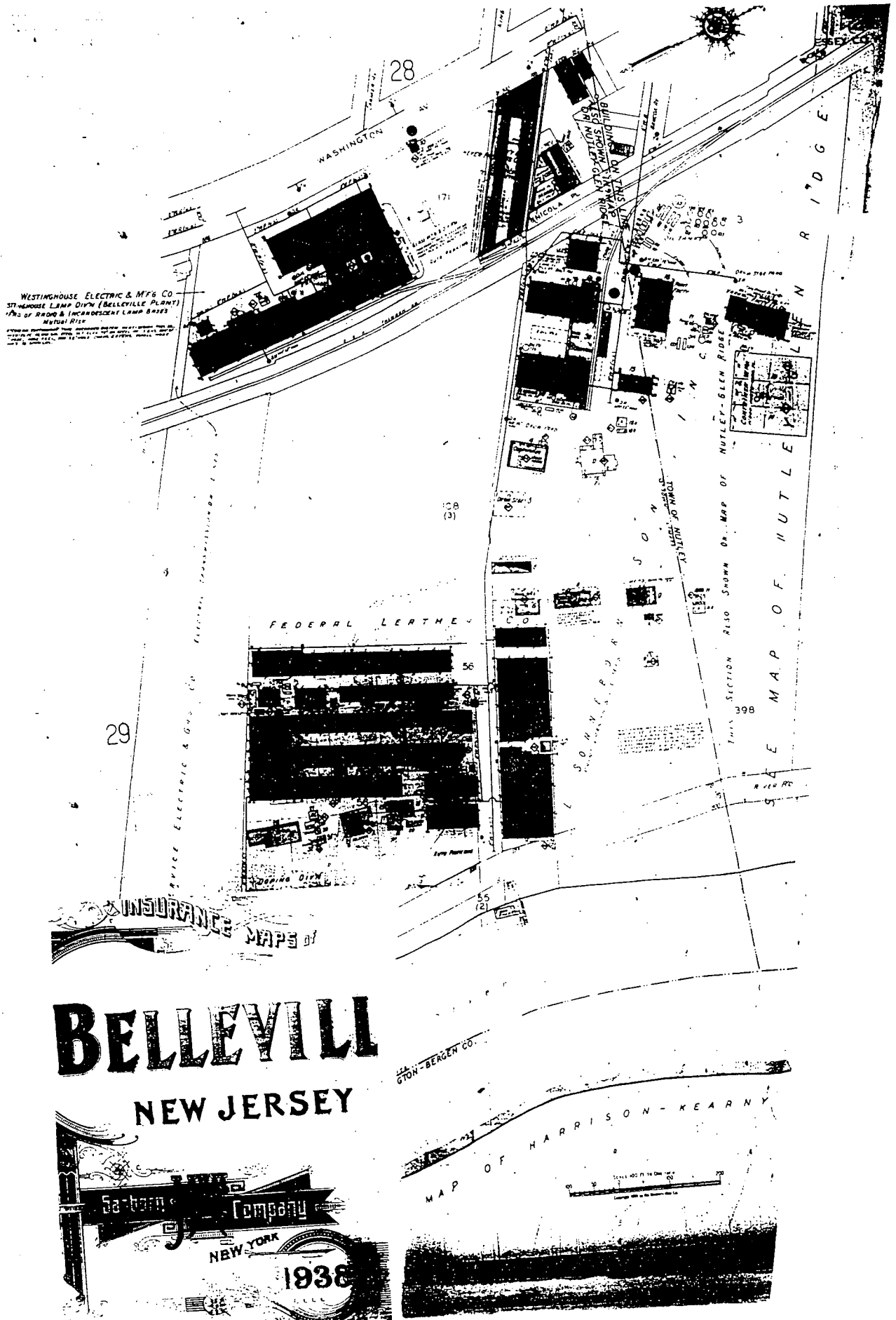
5c

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
	WALLINGTON BOROUGH	4600075	8	405125	740750		3.5	03	65	503	GTRB		80
	WALLINGTON BOROUGH	4600074	5	405125	740750		3.5	03	65	506	GTRB		150
5245	MONTCLAIR TOWN	2603687	RAND W. #1	404822	741237	S	3.7	13	13	300	GTRB		400
	MONTCLAIR TOWN	2603688	GLENFLD #2	404851	741242	F	3.8	13	13	300	GTRB		600
	MONTCLAIR TOWN	2604597	LORRAINE 3	405035	741237	F	4.4	13	13	300	GTRBS		400
5260	GLEN RIDGE WATER DEPT.	2604827	2	404847	741210	S	3.3	13	08	400	GTRB		300

Number of Observations: 117

P5


KEY TO MAP
ZONE B
ZONE A1
ZONE A8
ZONE B
*EXPLANATION OF ZONE DESIGNATIONS
ZONE
EXPLANATION
NOTES TO USER
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
TOWN OF
BELLEVILLE,
NEW JERSEY
ESSEX COUNTY
ONLY PANEL PRINTED
COMMUNITY-PANEL NUMBER
340177 0001C
MAP REVISED:
SEPTEMBER 4, 1987
Federal Emergency Management Agency
IDEAL PLATING AND POLISHING CO., INC
ST.
AVE.
PRESTON
UNION
MYRTLE AVE
ELMWOOD
KATHRYN
AGNES
GREYLOCK
CAMPBELL
CREST DRIVE
BIRCHWOOD
BELL
BREMOND
BEECH
FLOYD
LOOK
OVER-
WASHINGTON
LARMER
KING
RM 11
CONRAIL
IDEAL
PRIVATE DRIVE
ROOSEVELT AVE
ZONE C
Belleville Industrial Center
ZONE B
ZONE A7
ZONE A9
ZONE C
RIVER
APPROXIMATE SCALE
500 0 500 FEET
6


28
WASHINGTON
WESTINGHOUSE ELECTRIC & MFG CO
STINGHOUSE LAMP DIV'N (BELLEVILLE PLANT)
ING OF RADIO & INCANDESCENT LAMP BASES
Mutual Risk
MAP OF NUTLEY-GLEN RIDGE
TOWN OF NUTLEY
FEDERAL LEATHER
29
INSURANCE MAPS of
BELLEVILL
NEW JERSEY
Sanborn Company
NEW YORK
1938
MAP OF HARRISON-KEARNY

7a

REPORT

POPULATION: 30,000

Prevailing Winds:—Northwest.

PAVING:—45 miles of paved streets.

GRADES:—Slightly rolling.

WATER FACILITIES

Municipally owned. Supply obtained from City of Newark. (For detailed report on facilities see Newark, N. J., Vol. 1). System divided into high and low services. Low Service supplied through two 12" connections from the City of Newark's Belleville Reservoir, elevation 165', capacity 14,000,000 gallons. High Service supplied through six 6" or 8" connections from Macopin Intake (42" reducing to 36") and the Newark 36" high service main. Section south of Newark Ave. (Silver Lake) supplied directly from City of Newark distribution system.

55 miles of 4" to 16" water pipe. 498 double and triple hydrants. Average daily consumption 2,000,000 gallons. Average pressure 60 lbs. Pressure at Belleville and Washington Aves. 84 lbs.

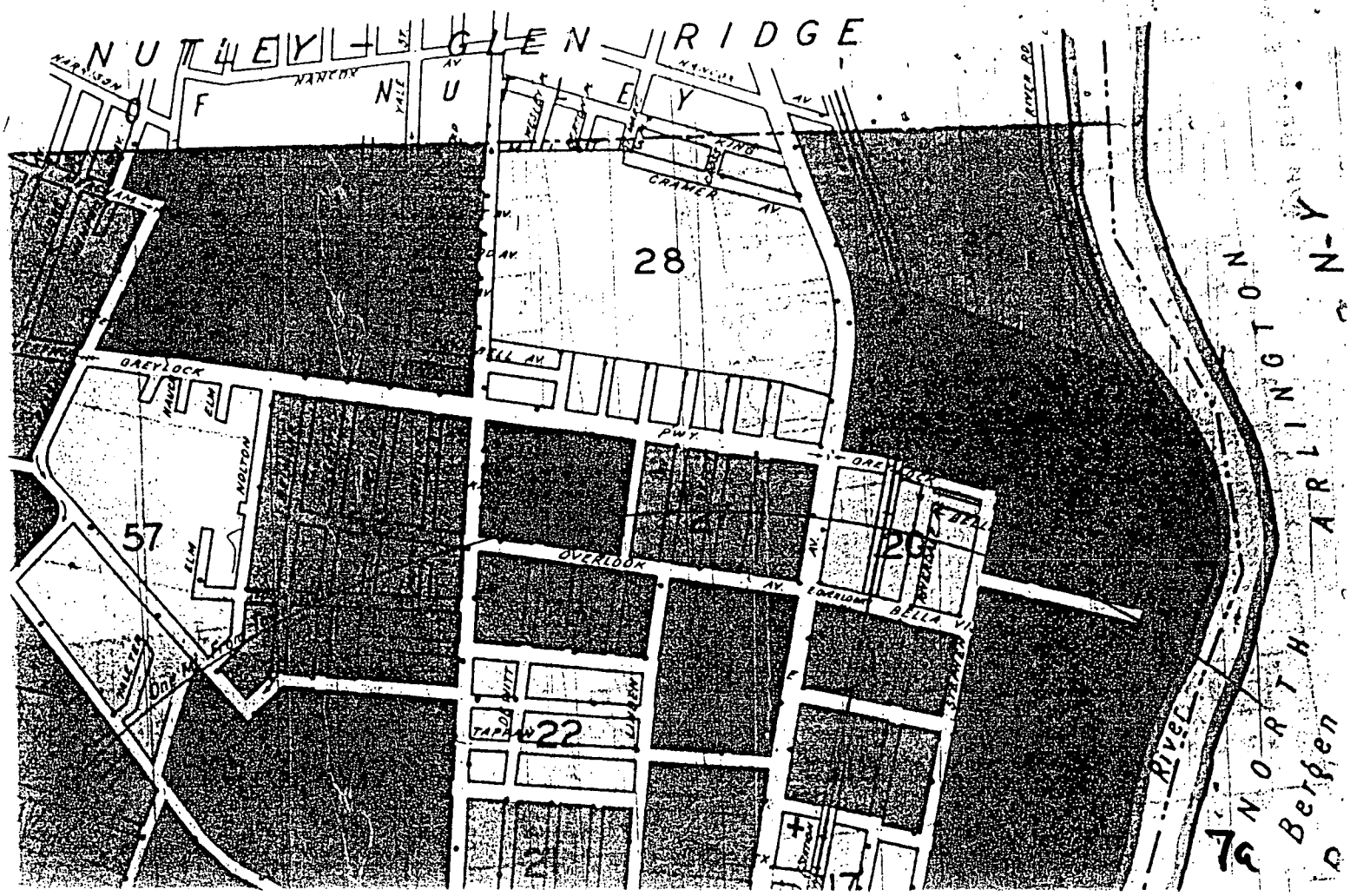
FIRE DEPARTMENT

Partly paid consisting of 1 chief, 2 battalion chiefs, 2 lieutenants and 19 men. 20 volunteers. 3 stations.

1 Day-Elder service truck with 284' of ladders. 1 Day-Elder hose wagon with one 85 gallon chemical tank, 200' hose and 1,100' 2½" hose. 1 Day-Elder hose wagon with one 150 gallon booster tank, 250' hose and 1,100' 2½" hose. 1 Seagrave 750 gallon per minute pumper with one 80 gallon booster tank, 200' hose and 1,000' 2½" hose. 1 American-LaFrance 500 gallon per minute pumper with one 100 gallon booster tank, 200' hose and 1,000' 2½" hose. 1 Seagrave 600 gallon per minute pumper with one 100 gallon booster tank, 200' hose and 1,000' 2½" hose. 3,000' 2½" hose in reserve.

Gamewell fire alarm system. 59 boxes. Headquarters located at Fire Station No. 1 at 117 William St., in one-story brick addition. Alarm also by telephone.

No Fire Limits. No Fire-resistive Roofing Ordinance.



KEY

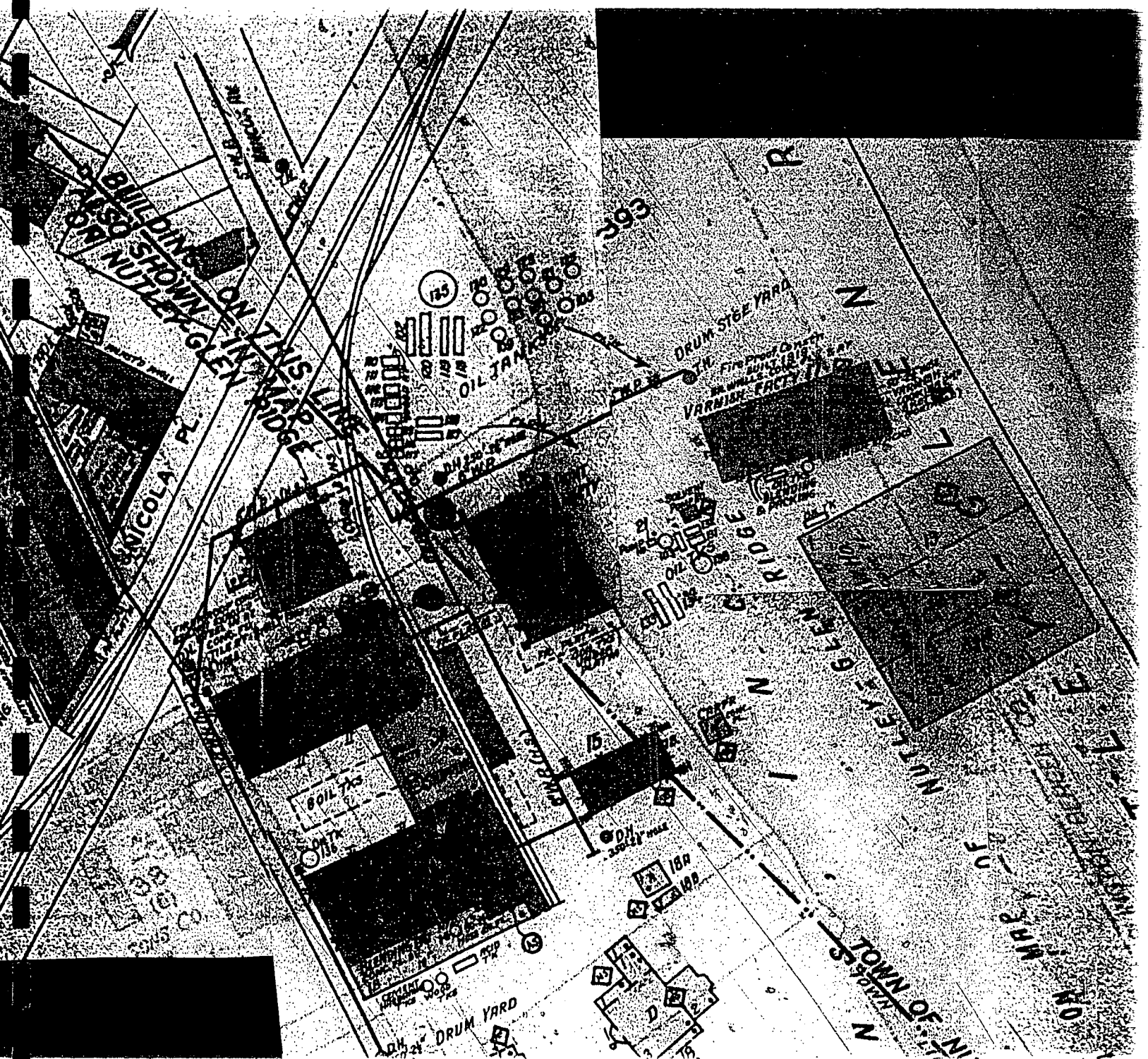
Fire proof construction.
(OR FIRE RESISTIVE CONSTN)
Adobe building.
Stone building.
Concrete, lime, cinder or cement brick
Hollow concrete or cement block constn
Concrete or reinforced concrete constn
Tile building.
Brick building with frame cornice.
" " " stone front.
" " " frame side.
(DIVIDED BY FRAME PARTITION)
Brick veneered building.
" and frame building.
Frame building, brick lined
" " metal clad
Frame building.
Iron building.
Tenant building occupied by various manufacturing or occupancies
Frame building covered with asbestos
Brick building with brick or metal cornice.
Fire wall 6 inches above roof.
" " " 12 " " "
" " " 18 " " "
" " " 36 " " "
Figures 8, 12, 16 indicate thickness of wall in inches.
Wall without opening and size in inches.
Wall with openings on floors as designated.
Opening with single iron or tin clad door.
" " double iron " " " doors.
" " standard fire doors.
Openings with wired glass doors.
Drive or passage way.
Stable.
Auto House or private garage.
Solid brick with interior walls of C.B. or C.B. and brick mixed.
Mixed construction of C.B. and brick with one wall of solid brick.
Mixed construction of C.B. and brick
h 4" brick.
C.B.

Window opening in first story.
Window openings in second and third stories.
Window openings in second and fourth stories.
Windows with wired glass.
Windows with iron or tin clad shutters.
Window openings tenth to twenty-second stories.
Open elevator.
Frame enclosed elevator.
" " " with traps.
" " " self closing traps.
Concrete block enclosed elevator with traps.
Tile enclosed elevator with self closing traps.
Brick enclosed elev. with wired glass door.
Width of street (BETWEEN BLOCK LINES, NOT CURB LINES.)
Iron chimney
" (WITH SPARK ARRESTOR)
Brick chimney.
(15) Ground elevation.
V.B. Vertical steam boiler.
G. Gasoline tank.
(O.U.) Open under.
Siamese fire dept. connection
Single fire dept. connection
5 Block number.
V.P. Vertical pipe or stand pipe.
AFA Automatic fire alarm.
IEP Independent electric plant.
AS Automatic sprinklers.
ACS Automatic chemical sprinklers.
Automatic sprinklers in part of building only.
(NOTE UNDER SYMBOL INDICATES PROTECTED PORTION OF BUILDING)
1ST ONLY
NS Not sprinklered.
Outside vertical pipe on fire escape.
Fire alarm box.
Single hydrant.
D.H. Double "
T.H. Triple "
Q.H. Quadruple hydrant of the "High Pressure Fire Service"
H.P.F.S. Fire alarm box of the "High Pressure Fire Service"
H.P.F.S. Water pipes of the "High Pressure Fire Service"
" " and hydrants of the "High Pressure Fire Service" as shown on key map.
6" W.P. PIPE Water pipes and size in inches.
6" W.P. PIPE (PRIVATE) Water pipes of private supply
House numbers shown nearest to buildings are official or actually up on buildings.
Old house numbers shown furthest from buildings
24 Reference to adjoining page.
Fire engine house, as shown on key map.
Fire pump.
(36) Under page number refers to corresponding page of previous edition.

7a

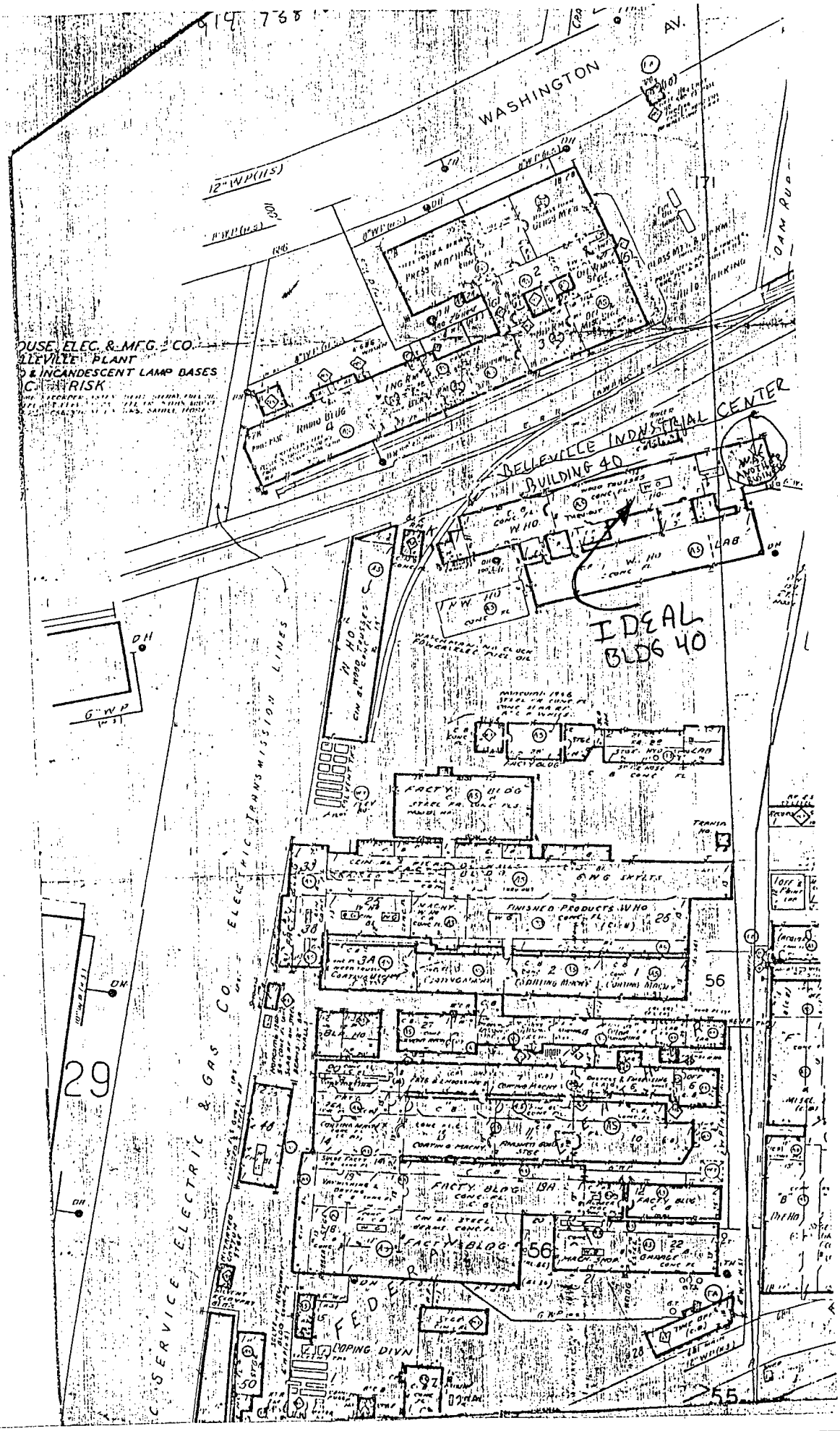
L. SONNEBORN SONS
PAINT, VARNISH & OIL
FEDERAL LEATHER
108 (E)
DRUM YARD
LIMITS OF NUTLEY
LIME HOUSE
CITY OF NEWARK

7a


BUILDING SHOWN THUS
NICOLAY PL.
OIL TANK
DRUM STEE YARD
VARNISH FACTY
OIL TKS
DRUM YARD
TOWN OF NIAGARA
393

7a

FEDERAL
LEATHER
56
L. SONNEBORN SONS
PAINT, VARNISH & OIL
AUTO PARKING
Post Office
Parks Sons
Parking


WASHINGTON AV.
12" WP (11 S)
171
OUSE ELEC. & MF.G. CO.
LLEVILLE PLANT
& INCANDESCENT LAMP BASES
C. RISK
RADIO BLDG
BELLEVILLE INDUSTRIAL CENTER
BUILDING 40
IDEAL
BLDG 40
FACTY BLDG
FINISHED PRODUCTS WHO
CONVEYOR
CAPPING MACHS
CONTING MACHS
FACTY BLDG 19A
FACTY BLDG 56
GARAGE
DIVING
29
56
55
50
ELECTRIC TRANSMISSION LINES
SERVICE ELECTRIC & GAS CO.

7b

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 7-22-93

TIME _____

SITE NAME Ideal Plating + Polishing

LOCATION Belleville

CALLER SODANO

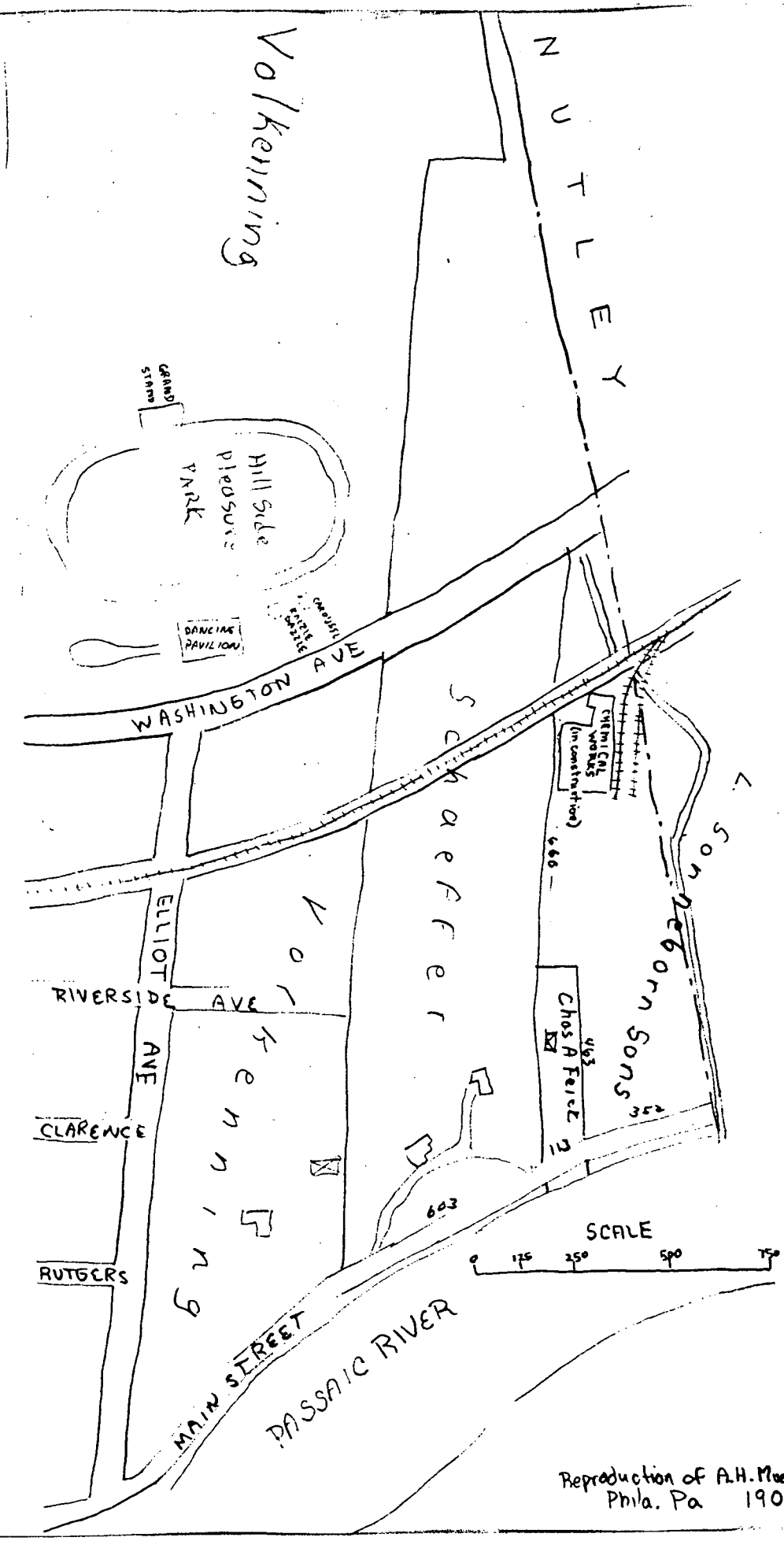
PERSON CONTACTED Al DAVIS PHONE NO. 914 738 1649

AFFILIATION Sanborn Map Co.

SUMMARY OF CALL The Sanborn Co. produced maps of Belleville in 1938, 1950 + 1968.

SIGNATURE

7b



Reproduction of A.H. Mueller Map
Phila. Pa 1906

ATTACHMENT A

A1

STATE OF NEW JERSEY

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

CHARLES R. ERDMAN, JR., COMMISSIONER

DIVISION OF WATER POLICY AND SUPPLY

HOWARD T. CRITCHLOW, DIRECTOR AND CHIEF ENGINEER

SPECIAL REPORT 10

PRELIMINARY REPORT ON THE GEOLOGY AND GROUND-WATER SUPPLY OF THE NEWARK, NEW JERSEY, AREA

By

Henry Herpers

and

Henry C. Barksdale

1951

Prepared in cooperation with the
United States Department of the Interior
Geological Survey

A2

INTRODUCTION

Purpose and scope of investigation

In the Newark area, the chief uses of ground water are for cooling by industries, for air-conditioning, and for general processing and sanitary purposes. Several beverage manufacturers use ground water as an ingredient in their products, and the water from a few wells is used for drinking. As one result of a recently completed survey of all known wells, it is estimated that not less than 20 million gallons of ground water is used in this area per day. In summer an estimated one to one and a half million gallons of ground water is used for air-conditioning alone.

Records kept by various well owners and by State and Federal agencies have shown a marked lowering of the water level in many Newark wells, as well as a diminution in the yield of some. They have also shown that the ground water in certain parts of the area has become brackish because of heavy pumpage and the infiltration of salt water from surface sources. These conditions are particularly severe in the eastern part of Newark, in what is known locally as the "Ironbound District." In order to give some conception of the seriousness of these conditions, it may be mentioned that in the year 1879 the water level in wells in eastern Newark ranged from a few feet above to 25 feet below the surface of the ground, and several 8-inch wells yielded as much as 500 gallons per minute when pumped by direct suction. Analyses of the water from these wells showed that it contained only 10 to 25 parts per million of chloride.[1]

1/Annual report of the State Geologist, p. 126 ff., 1879.

Analyses made by the City Chemist of Newark showed chloride contents ranging from 250 to 2,500 parts per million in water taken from wells in 1942, in this same area. Moreover, in 1947 the general water level ranged from 125 to 200 feet beneath the land surface, and pumping levels in wells ranged from 135 to 290 feet, depending upon the amount of water pumped and the season of the year. In view of these facts, it was decided to make an intensive study of the geology and ground water of the Newark area, and to publish a report on the findings, in order to summarize and make generally available our knowledge of the quantity and quality of ground-water resources of the area, and to facilitate the planning of ground-water pumpage in the future.

The area included in the present study and referred to herein as the Newark area is shown on figure 1. It lies principally in Essex County, but includes small parts of Hudson and Union Counties. It includes all of the city of Newark, except the extreme western part; the greater part of Harrison; and parts of Kearny, Irvington, East Orange, Bloomfield, and Elizabeth.

The Newark area lies wholly within the physiographic province known as the Piedmont Plain. The southeastern part of the area is a lowland with considerable tidal marsh, and the balance of the area is characterized chiefly by low ridges trending in a northeasterly direction. The average annual rainfall at Newark is approximately 47 inches, and the mean annual temperature is about 53°F.

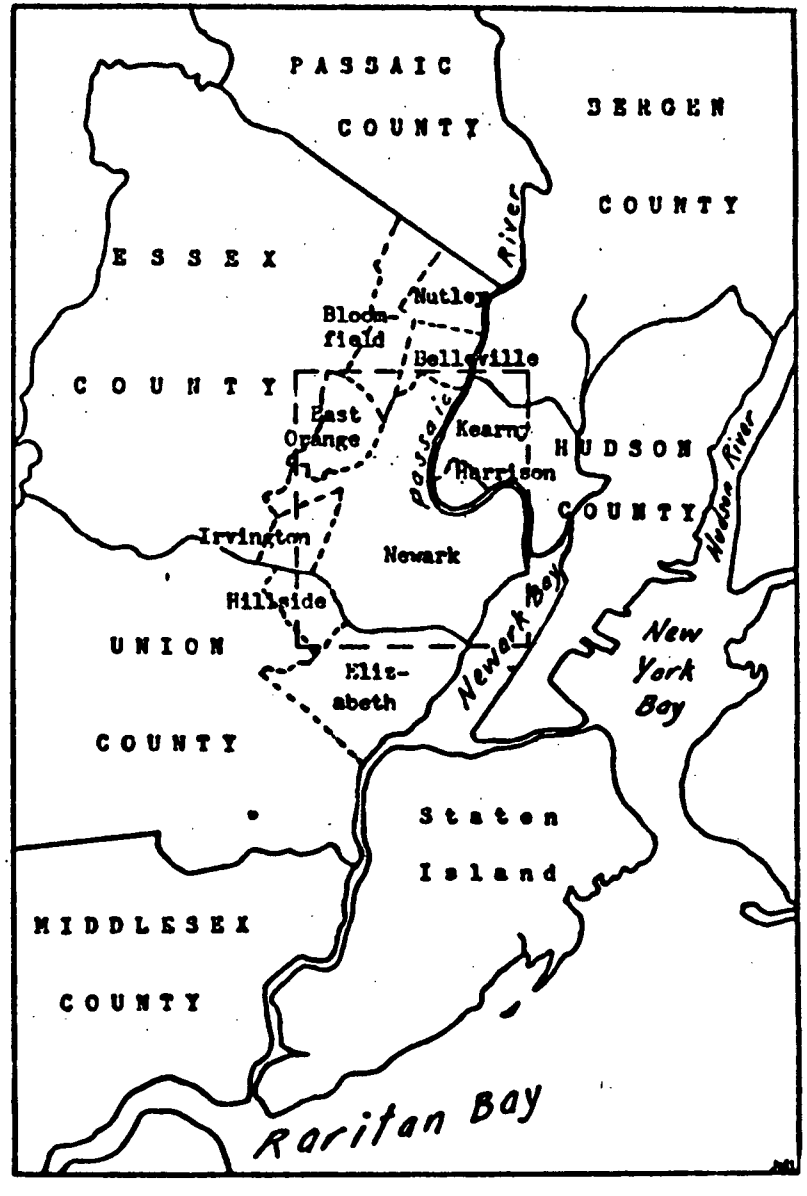


Figure 1.-Map of northeastern New Jersey, showing location of the Newark area.

Acknowledgments

This report is the result of cooperative work by the Geologic and Topographic Survey and the Division of Water Policy and Supply, both of the New Jersey Department of Conservation and Economic Development, and by the United States Geological Survey. M. E. Johnson, State Geologist, H. T. Critchlow, Director of the Division of Water Policy and Supply, and A. N. Sayre, Geologist in Charge, Ground Water Branch, U. S. Geological Survey, have exercised general supervision over the work since its beginning. Mr. Johnson and Henry C. Barksdale, District Engineer of the Ground Water Branch, U. S. Geological Survey, have shared local responsibility for the progress and details of the work. The gathering of the data necessary for the preparation of this report has been largely in the hands of Henry Herpers of the Geologic and Topographic Survey and Jerome M. Ludlow of the U. S. Geological Survey. The greater part of this report was written by Mr. Herpers. The sections on the hydrology of the various formations were written by Mr. Barksdale.

Needing the help of the citizens and industries of Newark, and believing that they would gladly cooperate if they knew the facts, the Newark Chamber of Commerce was advised of the proposed survey and report, and a story giving the reasons for the work and indicating its importance was given the press early 1947. It is now the authors' pleasure to express their sincere appreciation of the help given the project by almost everyone approached. The work of gathering data was materially facilitated by the assistance of the following well contractors: Artesian Well and Equipment Co., C. W. Lauman & Co., Layne-New York Co., Parkhurst Well and Pump Co., Rinbrand Well Drilling Co., Samuel Stothoff Co., and William Stothoff Co. Especially valuable data on the operating characteristics of their wells, and other aid, were freely given by Mr. B. H. Bishop and other engineering personnel of P. Ballantine & Sons and by Mr. Wm. E. Helmstaedter, Mechanical Engineer, and others of the Celanese Corporation of America. Particular acknowledgment is made of the assistance rendered by P. Ballantine & Sons in making their well field available for pumping tests and altering their plant routine to meet the requirements of the test. The Division of Water and the Department of Health of the City of Newark have assisted materially in locating wells and in furnishing records of analyses of well water.

OUTLINE OF GEOLOGY

The Newark area lies wholly within the section of New Jersey underlain by the Newark group of rocks of Triassic age. These rocks form a belt extending from the Hudson River across central New Jersey, Pennsylvania, and Maryland, and into Virginia. They consist of shale, sandstone, argillite, and conglomerate with included sheets, sills, and dikes of trap rock (basalt and diabase).

In New Jersey, the sedimentary rocks of the Newark group have been divided on the basis of their lithology into three units. The lowest is chiefly red, buff, or gray arkosic sandstone and is called the Stockton formation; the middle unit, called the Lockatong formation, is composed largely of gray, purplish-gray, or dull-red argillite; and the uppermost unit, the Brunswick formation; consists chiefly of soft red shale and red sandstone. The Brunswick formation is the bedrock throughout the Newark area. In general, the strata have been tilted northwestward and locally they have been warped into gentle flexures with occasional faulting. The harder beds form ridges, most of which trend northeastward.

The northern part of the belt of Triassic rocks was glaciated in late geologic time, so that much of the surface is covered with a mantle of glacial drift, which in many places is thick enough to conceal the bedrock surface. Although the bedrock crops out in only a few places, it accounts for the relief in the western part of the Newark area. There the covering of glacial drift is thin. In the eastern section the bedrock is concealed by thick deposits of silt and clay with

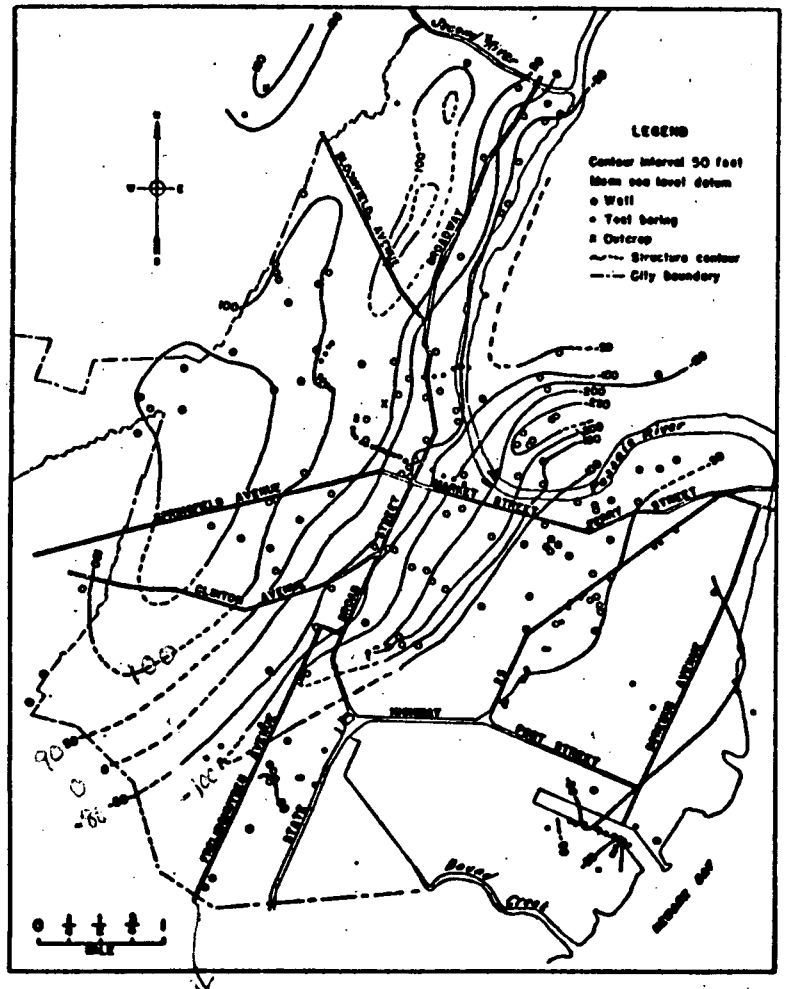


Figure 2.-Map showing elevation and configuration of bedrock beneath Newark, N. J., and vicinity.

thinner beds of sand and gravel, and, although topographically this region is a plain, borings have shown that the surface of the underlying bedrock does not conform with the ground surface. (See figure 2). The valleys of many of the streams in the glaciated area contain terraces of sand and gravel of glacial origin.

The geologic history of the area since the beginning of Triassic time is relatively simple. During Triassic time, sands and muds were deposited in an arid basin. Near the end of Triassic time the beds were faulted and tilted toward the northwest. Later erosion reduced the surface to a plain, over which the sea then advanced an indeterminate distance to the northwest. Sands and clays, such as those found in the coastal plain, were deposited in this sea. Still later, the sea withdrew and the forces of erosion removed the sediments of the coastal plain and then etched out the larger topographic features that we see today. During the Pleistocene epoch the details of the topography were altered by the ice. Hills were smoothed somewhat and much drift was deposited. The drift in some places filled valleys existing prior to glaciation and effected important changes in drainage. A general rise of sea level at the close of the Pleistocene epoch flooded low areas adjacent to the coast, forming Newark Bay at the junction of the Hackensack and Passaic Rivers. Since then the meadows have been formed by stream deposits, and very, very recently -- in terms of the geologic calendar -- much meadowland has been reclaimed by suitable drainage and by filling. A typical example of such "made" land is the area upon which Newark Airport has been built.

The succession of formations in the Newark area, arranged in normal sequence (i.e., youngest formation at top) is shown in the following table:

Table 1.--Stratigraphic table in the Newark area

Cenozoic era
  Quaternary system
    Recent series
      Alluvium and meadow muck
    Pleistocene series
      Glacial till and stratified deposits of glacial origin

UNCONFORMITY

Mesozoic era
  Triassic system
    Newark group
      Brunswick formation

UNCONFORMITY

Older rocks[2]

2/The deepest well drilled in Newark failed to pass through the red shale and sandstone at 2,538 feet. It cannot, therefore, be stated with certainty what sort of rock lies below the city at great depths. From the general geology of the Triassic rocks, presumably the Palisade diabase would be found at great depth, and more rocks of the Newark group below the diabase. Below the Triassic rocks lie crystalline rocks of very great age which extend to an undetermined depth.

HYDROLOGY AND GEOLOGY OF THE ROCK FORMATIONS

A16

Recent deposits

Recent deposits are found mainly in the eastern part of the Newark area where they occur in the tidal marshes or meadow lands along Passaic River and bordering Newark Bay. They consist largely of unconsolidated mud and silt with inclusions of peat and other organic materials and occasional lenses of sand and gravel. They have been deposited on top of the Pleistocene sediments, or perhaps in places directly on the Triassic rocks, by the Passaic and Hackensack Rivers and by smaller streams flowing across the area and discharging into those rivers, or into Newark Bay. The Recent deposits range in thickness from a feather edge to 35 feet.

Hydrologically, the Recent deposits are of relatively little importance except as they may transmit water to the underlying rocks or exclude it from them. Their permeability is relatively low and they occur in the parts of the area that are exposed to salt water. Therefore their action as a barrier in retarding the percolation of salt water into the underlying rocks is perhaps their most important function. In this respect they perform imperfectly because there probably are breaks in the cover that they provide at critical points, such as the ship channels in the river and in the bay.

Pleistocene deposits

The Pleistocene deposits in the Newark area are all of glacial origin. They consist of till--an unconsolidated, unstratified, heterogeneous mixture of clay, boulders, and sand--and stratified glacial drift, which is composed of sand and gravel that have been more or less sorted and stratified by the action of glacial waters. The deposits of glacial origin overlie the bedrock throughout practically all the Newark area, the bedrock cropping out only in a few more or less isolated spots. The thickness of the Pleistocene deposits varies greatly. In the western part of the area they are only a few feet thick, forming a thin veneer over the underlying bedrock, but in the eastern part of the area they

are so thick that they mask entirely the topography of the underlying rock. The map of the elevation and configuration of the bedrock beneath Newark, N. J., and vicinity (figure 2) shows that, in the area east of Broad Street, there is a large deep valley cut in the bedrock, which is entirely covered by glacial drift. At the surface this area presents the aspect of a plain. The depth to rock in the buried valley ranges from 125 feet to more than 190 feet in Newark, and to as much as 300 feet in Harrison. Farther east in the Newark area, bedrock lies at lesser depths. The buried valley extends northeastward across the city from its southwestern boundary, crossing Frelinghuysen Avenue near its northern end, and then extends east of and roughly parallel to Broad Street, finally crossing over into Harrison, where it bends eastward. It has not yet become possible to show the extension of the valley to the southwest or to the east because of the lack of sufficient reliable boring data, but its course and shape across the city of Newark is fairly accurately known. From its shape as shown on plate 1, it is apparent that the valley slopes toward the northeast, and this direction is therefore the probable direction of flow of the river that cut the valley prior to the Pleistocene epoch.

The character of the Pleistocene deposits varies throughout the Newark area. In general, these deposits consist chiefly of till in that part of the area lying west of Broad Street, whereas the cuttings taken from many test borings and wells in the eastern part of the area show that the Pleistocene deposits there consist largely of stratified materials with interbedded lenses of till. (See logs 1 to 4 in appendix.)

The Pleistocene deposits in the bottom of the buried valley are worthy of special attention. In the southwestern part of the Newark area they consist for the most part of fine sand and clayey sand, but in the northeastern part the bottom of the valley contains deposits of coarse sand and gravel which in many places contain much water. (See logs 1 and 2 in appendix.) In fact, some of the best wells in the Newark area pump from these deposits.

Other coarse deposits of glacial origin are found in the valley of the Passaic River north of the point where

the river makes its great eastward bend.

The Pleistocene deposits are one of the two major aquifers in the area. Their hydrologic function is twofold. In the first place, under favorable circumstances they yield water in substantial quantities directly to wells. In the second place, they absorb and store water from precipitation and from surface sources and transmit it to the underlying rocks.

Where the deposits contain beds of sand and gravel that are thick enough and extensive enough, they yield large quantities of water to wells finished in them. Insofar as is known, these conditions are limited almost entirely to the buried valley, where several wells yielding from 175 to more than 600 gallons per minute have been developed. For example, a well drilled for the Driver Harris Co. in Harrison near the locality where the buried valley crosses the Passaic River yielded 600 g.p.m. with a draw down of approximately 60 feet.

Detailed and extended records of water levels in and of pumpage from wells in this aquifer are not available. It is therefore impossible to say at this time whether water is being withdrawn from this aquifer at a rate less than, equal to, or greater than the rate at which recharge is available. The fact that two or three million gallons of water have been withdrawn daily for a number of years from the sand and gravel in the buried valley suggests that a large quantity of recharge occurs. On the other hand, the fact that the static water levels in some wells tapping this aquifer are now substantially below sea level suggests caution before further developments are made.

A more definite and immediate threat to the safe yield of the gravels of Pleistocene age is the apparent intrusion of salt water from surface sources. Wells near the point where the buried valley crosses the Passaic River are yielding water that contains 200 to 500 parts per million of chloride and is already unsuitable for some uses. Inasmuch as there is hydraulic continuity between the gravels and the underlying rocks, the problem of salt-water intrusion will be discussed in more detail in a section of this report that deals primarily with the water supply from the rocks.

A7

Reliable and detailed analyses of waters from wells pumping from the sand and gravel in the buried valley are not available at the present writing.

Salt-water intrusion

The infiltration of salt water into the body of fresh ground water is referred to as salt-water intrusion. In the Newark area it is believed to be caused principally by heavy pumping in areas adjacent to Newark Bay and the Passaic River. Heavy pumping lowers the general ground-water levels, creating a difference in head between the ground-water body and the nearby bay and river, inducing a flow of salt water into the water-bearing formations. Another factor that probably contributes to salt-water intrusion is the dredging of ship channels in the Passaic River and Newark Bay. As mentioned previously in the discussion of the hydrology of the Recent deposits, those deposits act as an imperfect barrier to the infiltration of salt water into the underlying materials. It is not improbable, therefore, that the deepening of ship channels in the river and bay has contributed to the breaking of the imperfect seal formed by the Recent (and, in some places, Pleistocene) deposits. In the areas of salt-water intrusion, the water in both the unconsolidated materials and the rocks is affected.

The attached map (figure 5) shows the distribution of the chloride content of the ground water in the area. Most of the data upon which the map was based were provided by the Newark City Chemist, through the courtesy of Dr. Charles V. Craster, Health Officer of the City of Newark. As almost all the analyses were made in 1942, when the City of Newark made a survey of certain qualities of the waters from wells in the city, the map presents a picture of the chloride content of the ground water at that time. Recent check analyses made in the investigation preceding this report, confirm generally the distribution of chloride shown. The curved lines represent points of equal chloride concentration.

Several areas of ground water with high chloride concentrations are shown, and all are in areas of relatively heavy pumpage. The first of these is along the Passaic River near the northern boundary of Newark, where there are several industries that use well water in processing.

The pumpage here is not as heavy as in the other areas, and great amounts of river water have not been drawn into the ground-water body. Mention might here be made of the single well near the bank of the Passaic River, just south of the area, marked A on figure 5, the water from which contained 1,710 parts of chloride per million. This well pumps from a gravel bed about 45 feet below the surface which is probably in direct hydraulic connection with the river.

The second area of high chloride concentration is near the intersection of Harrison Avenue and McCarter Highway. Here, fairly heavy pumpage has induced an inflow of water from the river.

The third area, near the intersection of Raymond Boulevard and Broad Street, contains several wells that pump large amounts of water, principally for air-conditioning.

The fourth and largest area with high concentrations of chloride in well waters is in the eastern part of the Newark area and is bounded roughly by Harrison Avenue on the north; by Fourth Street, extended to Port Street on the west; by Port Street on the south; and by the Passaic River and Newark Bay on the east. The area contains many industries that require large amounts of ground water for cooling and processing. Heavy pumping, continued over a period of many years, has caused the depression of the upper surface of the ground-water body, which has, in turn, led to river-water intrusion on a large scale. That the present character of the water in this area is materially different from its original character can be seen by comparison of analyses D, E, and F (See table 2 on p. 38) Analysis D was made of water taken from a well of P. Ballantine & Sons in January 1948, whereas analyses E and F, made in 1879, are of water taken from wells not far from the Ballantine plant. Analyses E and F show that the ground water in this section originally had a chloride content comparable to that of water taken from wells in areas away from the river and bay.

About 4,000 feet northeast of the intersection of State Highway 25 and Port Street a great concentration of chloride was found in three wells belonging to a single company. Some of the differences in chloride content in this area may be due to differences in depth. The

highest concentration (2,700 p.p.m.) was encountered in a well 535 feet deep, whereas lower concentrations were found in nearby shallower wells. At the time the deep well was drilled, it was thought that the highly saline water might be caused by a pocket of stationary ground water, which had acquired its high salt content from the formation because of a lack of normal ground-water movement in the vicinity. On the basis of this assumption, the well was pumped steadily at a high rate of discharge for a few weeks with the idea of pumping out the pocket of highly mineralized water and inducing a flow of fresh water into the well. The results were inconclusive and the well was finally abandoned because of the unsatisfactory quality of the water.

A9

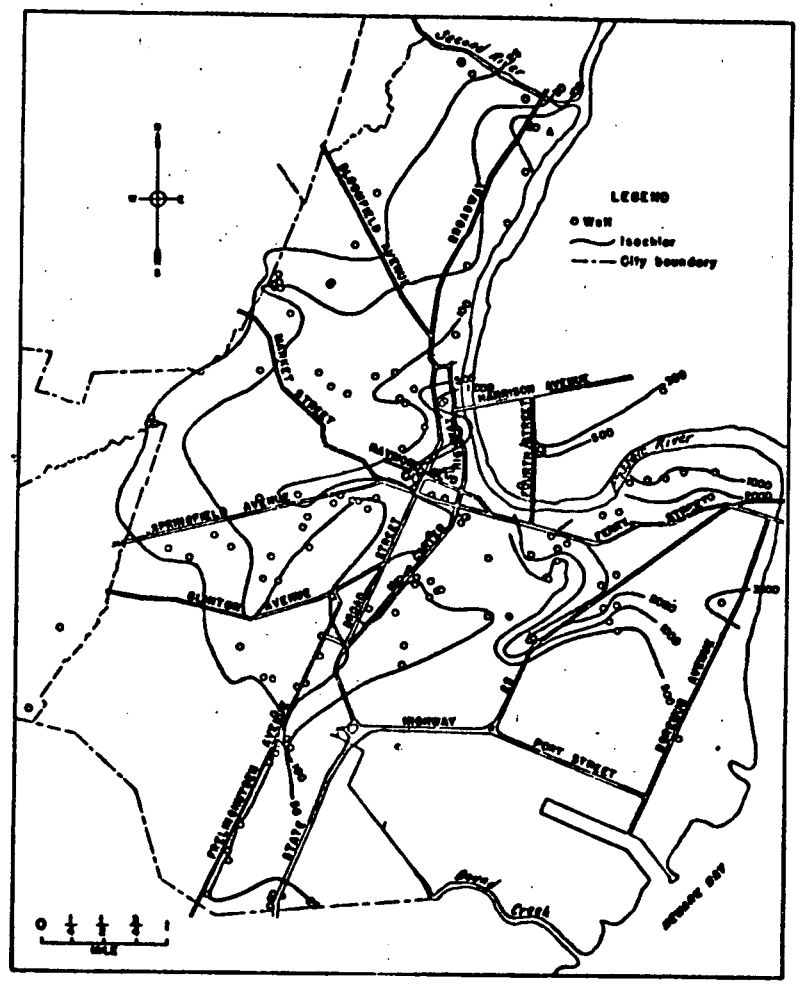


Figure 5.-Map showing chloride content of the ground water beneath Newark, N. J., and vicinity.

Temperature of the ground water

The average temperature of the ground water in the Newark area is approximately 55° F. The temperature of ground water, except as explained below, is largely a function of the depth of the aquifer from which it is drawn, and of the mean annual temperature of the air, which at Newark is 52.3° F. Water from very shallow wells will usually vary in temperature over the year. Water from somewhat deeper wells, however, has a temperature that, for all practical purposes, is equal to the mean annual temperature. The effect of the mean annual temperature on the temperature of ground water does not extend to great depths. It is known from numerous deep wells, mines, and test borings that the temperature of the earth's crust increases with depth. The rate at which the ground temperature increases with depth, known as the geothermal gradient, varies, depending upon many conditions, but generally an increase of 50 to 150 feet in depth will raise the temperature 1° F. Of course, in regions of active volcanism this rate of increase does not apply. In the Newark area the normal geothermal gradient is not known as all temperature measurements have been made at the point of discharge of the pumps. Each measurement, therefore, represents merely the temperature of the water issuing from the well, which is probably an average of the temperatures of water at all producing levels.

CONCLUSIONS

The studies that preceded this report were not detailed or prolonged enough to arrive at definite answers to important questions that arise with regard to the safe yield of the aquifers in the Newark area. Only very tentative conclusions can be made at this time. Observations and studies should be continued over a period of years in order that the safe yield may be defined.

Continuing observations should be made of the pumping rates in every well in the area and of the water levels in an adequate number of observation wells so that the rate and direction of flow in the aquifers and the

amount of recharge to them may be defined. Periodic analyses of the water from representative wells throughout the area should be made in order to detect changes in its quality and especially to define the intrusion of salt water. Geologic information should be sought to extend our knowledge of the buried channel that passes through the area and of the materials that fill it. Whenever wells or other deep excavations are made, particular attention should be given to the nature of the material overlying the rock in order to establish its geologic and hydrologic characteristics more fully, and ultimately to define the best areas of recharge.

In many parts of the area conclusive data are not available, but it seems probable that there are localities where additional quantities of ground water may be obtained. It also seems probable that in some heavily pumped parts of the area the safe yield is being approached or has already been exceeded. For example, in the area around the plants of P. Ballantine & Sons and the Celanese Corporation of America, the water levels have been lowered to such an extent that it seems unlikely that any substantial additional quantity of water can be withdrawn from the ground safely or economically. The quality of the ground water in this area is already unfit for some uses.

The experiments with artificial recharge at the Ballantine plant during the last two years offer promise of great improvement in the ground-water conditions in some parts of the area if water is available for continuing such recharge. This is certainly sound conservation practice and should be expanded as much as possible. Whenever recharging is undertaken in the future, careful observations should be made of water levels and of the quality and quantity of water recharged and withdrawn, in order to evaluate the effects more closely and to trace the movement of the water.

2. Log of well 2 drilled for John Nieder, 247 Emmet Street, Newark, N. J., by Layne-New York Co. Log furnished by Mr. W. A. North of Layne-New York Co.

Depth	Thickness	Description	Correlation
0' - 3'	3'	Concrete	Recent
3' - 5'	2'	Cinders	Fill
5' - 15'	10'	Yellow clay	Recent ?
15' - 27'	12'	Fine red sand	Glacial drift
27' - 55'	28'	Red quicksand	"
55' - 80'	25'	Tough red clay	"
80' - 125'	45'	Soft red clay	"
125' - 190'	65'	Red sandy clay	"
190' - 210'	20'	Soft red clay	"
210' - 215'	5'	Hardpan	"
215' - 225'	10'	Sand and clay	"
225' - 408'	183'	Red rock	Triassic

1. Log of well 2, drilled for Driver Harris Co., Harrison, N. J., by C. W. Lauman & Co. Log furnished by C. W. Lauman & Co.

Depth	Thickness	Description	Correlation
0' - 21'6"	21'6"	Fill	Fill
21'6" - 30'10"	9'4"	Sand and gravel	Glacial drift
30'10" - 39'0"	8'2"	Coarse sand and gravel	"
39'0" - 41'10"	2'10"	Streaks of hard red clay and gravel	"
41'10" - 58'2"	16'4"	Red clay, fine sand and gravel	"
58'2" - 62'2"	4'0"	Clay and gravel	"
62'2" - 71'9"	9'7"	Hard red clay and broken rock	"
71'9" - 82'0"	10'3"	Red clay and fine sand	"
82'0" - 112'11"	30'11"	Red clay and rock	"
112'11" - 135'0"	22'1"	Red clay	"
135'0" - 141'0"	6'0"	Hard packed sand	"
141'0" - 155'0"	14'0"	Red clay	"
155'0" - 166'0"	11'0"	Clay, sand, and gravel	"
166'0" - 173'3"	7'3"	Hardpan	"
173'3" - 176'3"	3'0"	Clay, fine sand, and gravel	"
176'3" - 187'3"	11'0"	Cemented sand and gravel	"
187'3" - 192'3"	5'0"	Fine brown sand and clay	"
192'3" - 212'10"	20'7"	Red clay	"
212'10" - 222'6"	9'8"	Sand, gravel, and red clay	"
222'6" - 225'6"	3'0"	Coarse sand and gravel	"
225'6" - 231'6"	6'0"	Clay and gravel	"
231'6" - 234'6"	3'0"	Coarse sand and small gravel	"
234'6" - 240'6"	5'6"	Clay and sand	"
240'6" - 243'6"	3'0"	Coarse brown sand, gravel, and some clay	"
243'6" - 253'6"	10'0"	Medium coarse red sand and grit	"
253'6" - 270'6"	17'0"	Red clay and gravel	"
270'6" - 291'6"	21'0"	Hard clay, sand, and large gravel	"
291'6" - 292'6"	1'0"	Medium coarse sand and large gravel	"
292'6" - 337'6"	45'0"	Red Shale	Triassic

3. Log of well 27 drilled for Celanese Corporation of America by Layne-New York Co. Compiled by H. Herpers from samples furnished by Wm. E. Helmstaedter, Mechanical Engineer, Celanese Corporation of America.

Depth	Thickness	Description	Correlation
2' - 27'	25'	Fine-grained red-brown sand	Glacial drift
27' - 32'	5'	Coarse gravel composed of red shale (to 1/2 in.)	"
32' - 71'	39'	Fine-grained red sandy clay	"
71' - 354'	283'	Red shale	Triassic
354' - 365'	11'	Red shale (softer than last)	"
365' - 377'	12'	Soft red shale (similar to last)	"
377' - 419'	42'	Fine-grained red sandstone	"
419' - 537'	118'	Red shale	"
537' - 580'	43'	Red shale (softer than last)	"
580' - 650'	70'	Very soft red shale	"
650' - 695'	45'	Soft red shale with some gypsum grains	"
695' - 725'	30'	Red shale. A few gypsum grains	"
725' - 730'	5'	Fine-grained red sandstone	"
730' - 787'	57'	Red shale with some gypsum grains	"
787' - 796'	9'	Fine-grained red shaly sandstone with gypsum grains	"
796' - 840'	44'	Red shale	"
840' - 856'	16'	Red sandy shale with large (1-1/2 in. x 1 in. x 1/8 in.) plates of gypsum, which appear to have been deposited in fractures in rock	"

4. Log of test boring No. 19, made at crossing of Route 25 addition and Lehigh Valley R. R. yards by Giles Drilling Co. for State Highway Department. Compiled by H. Herpers from inspection of samples.

Depth	Description	Correlation
0' - 3'	Cinders	Fill
4' - 5'	Cinders and meadow muck	Fill and Recent
10' - 11'	Cinders, gray clay, and meadow muck	"
16' - 17'	Gray, slightly sandy clay	Recent
20' - 21'	Red and gray clay and medium sand	Recent (reworked glacial drift)
30' - 31'	Fine red silty sand	Glacial drift
40' - 41'	Red clay	"
50' - 51'	Red sandy clay	"
60' - 61'	Red sandy clay and red shale (top of rock)	Triassic
61' - 71'	Red shale (core)	"

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ATTACHMENT B

GERAGHTY & MILLER SPECIAL REPORT

The New Jersey Ground-Water Situation

by David W. Miller

August, 1979 (see telecon note - 02-880332-SI

GERAGHTY & MILLER, INC.
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B1

THE TRIASSIC LOWLANDS AND THE HIGHLANDS REGION OF NORTHERN NEW JERSEY

The geology and hydrology of northern New Jersey are considerably more complex than the Coastal Plain region. To simplify, it has been divided into two broad areas, the Triassic Lowlands and the Highlands Region (Figure 1). Unlike the Coastal Plain, where the aquifers consist of extensive beds of unconsolidated deposits, the primary water-bearing units in northern New Jersey are sedimentary and crystalline rocks (Figure 11). These vary considerably in their ability to yield water, depending on rock type and location. Both regions are also heavily dependent upon unconsolidated glacial deposits for water supply and where these occur in buried, eroded rock channels and are thick and permeable, the glacial sediments represent the most important source of ground water in both the Triassic Lowlands and the Highlands. Figure 12 shows the general major deposits of glacial origin that may have some ground-water potential.

Geology and Hydrology

Triassic Sediments: The Triassic Lowlands are almost entirely underlain by sedimentary Brunswick Shale. Although its primary permeability is low, appreciable amounts of water are found in joints and fractures. However, unless a significant number of these joints and fractures are penetrated by a well, yields can be relatively small. The direction of highest permeability and of the greatest movement of water in response to pumping tends to parallel the strike of the beds, generally southwest to northeast.

In general, the principal water-bearing zone of the Triassic rocks ranges from less than 200 feet to 600 feet in depth. The median depth of industrial and municipal supply wells in Bergen County is 260 feet. High-yield wells tapping this aquifer in Essex County are between 300 and 400 feet deep. There appears to be a direct relationship between well yield and thickness of overlying unconsolidated glacial deposits. Wells generally produce more where the overlying deposits are relatively thick, stratified, and coarse-grained. These surface deposits are often in direct hydraulic connection with the bedrock, and act as a source of recharge because of their greater capacity to receive and store precipitation (Figure 12).

A number of high capacity wells tap the Triassic rocks. In Essex County, yields of 35 public supply, industrial, and commercial wells range from 35 to 820 gpm (gallons per minute) and average 364 gpm. Wells over 300 feet deep and larger than 8 inches in diameter have a median yield of 230 gpm in Passaic County. However, the ability to develop high capacity wells is not uniform throughout the region. Many wells drilled during exploration programs are never equipped as production wells because of poor yields.

Igneous rocks associated with the sedimentary formations, principally diabase and basalts, are highly resistant to erosion and form the ridges of the Watchung Mountains and the Palisades. They are poor aquifers, tapped primarily for domestic purposes by wells yielding 5 gpm or less.

Glacial Sediments: Unconsolidated deposits overlying rock in northern New Jersey consist generally of till, clay, or stratified drift. These deposits are thickest in the valleys and thin or absent in upland areas. Permeable sands and gravels contained within the valley fill sediments that are suitable for ground-water development range in thickness from 50 to several hundred feet. Individual beds that can support high capacity wells are not extensive, and lithology may change radically over as little as 100 feet within the same valley. Well yields commonly reported for the glacial sediments represent successful wells located from a program of test drilling and pumping.

Although the rock aquifers have been mapped in some detail throughout both the Triassic Lowlands and the Highlands Region, the areal extent of important glacial aquifers is relatively unknown except in some of the more heavily developed areas of eastern Morris and western Essex Counties, Union County, the Ramapo River subbasin, and the Rockaway River subbasin (Figure 12).

Public supply and industrial wells tapping the more permeable stratified drift are almost uniformly capable of producing several hundred thousand gpd to more than one mgd. For example, yields of wells completed in Union County in 50 to 200 feet of sand and gravel sediments in Kenilworth-Newark Valley, Summit Valley, Union Valley, and Rahway Valley, average approximately 400 gpm. Wells in Essex and Morris Counties tapping glacial sands and gravels adjacent to the Passaic River and its tributaries produce one to 1.5 mgd. Total pumpage from the system of buried valleys in this latter area is about 20 mgd, with the highest yields from formations receiving recharge from adjacent streams.

Finally, land-use planning in the heavily urbanized northeast portion of the Triassic Lowlands has generally failed to consider the adverse effects of paving potential recharge areas, and/or the impact of construction of regional sewers on ground-water availability. In addition, many communities wholly dependent on ground water are so built up that there is not enough remaining open space to carry out the exploration necessary to locate additional production well sites.

In the preparation of this special report, factors affecting ground-water availability such as recharge rates, pumpage, diversion rights, consumptive use, and interference with surface-water supplies were evaluated on a county-by-county basis. This information was supported by interviews with ground-water users and public agency personnel, and review of data from organizations involved in water-resource management (state, USGS, interstate agencies, and private consultants). Table 2 summarizes ground-water pumpage in northern New Jersey.

Bergen County: Generally, the eastern section of the county is supplied by surface water and the western section by ground water. Portions of the central and southwestern sections are served by both.

Because yields are generally higher, about 75 percent of the pumpage in the Ramapo River basin is from stratified drift, even though it underlies only a small percentage of the total basin area. Wells in valley-fill deposits supply most of Mahwah and all of Oakland.

Industrial and public supply pumpage is concentrated in a central

north-south band, east of the Passaic River, and near the Saddle River. Most of the southern and central part of the county is sewered; only public supply pumpage in the extreme northern section of the county is not used consumptively. The percentage of industrial pumpage used consumptively is unknown, but many of the industrial plants along the Passaic and Saddle Rivers discharge to the rivers, and the water is essentially lost from the ground-water system. There are indications of areawide water-level declines in southern Bergen County from overpumping the Triassic shales.

The opportunity for further development of ground water depends to a great degree on the future industrial pumpage, and the ability to develop surface water and ground water conjunctively in basins containing significant glacial deposits. The bedrock aquifer already appears to be overstressed in areas of concentrated pumpage.

Essex County: Ground water accounts for about 28 percent of the total water used in the county. More than 80 percent of the 35 mgd pumped for public supply is obtained from stratified drift deposits, mostly in the western portion of the county. This heavy pumpage and urbanization in the Livingston-Florham Park-Millburn area have resulted in severe water-level declines in both the unconsolidated and sandstone aquifers, which function as a single hydraulic unit in the area (Figure 12).

Heavy pumpage from the Triassic sediments in the Newark area has exceeded the average recharge to the system, and water levels have been declining for years with serious salt-water intrusion from Newark Bay and the Passaic River. Newark and the western valley-fill aquifer areas are of

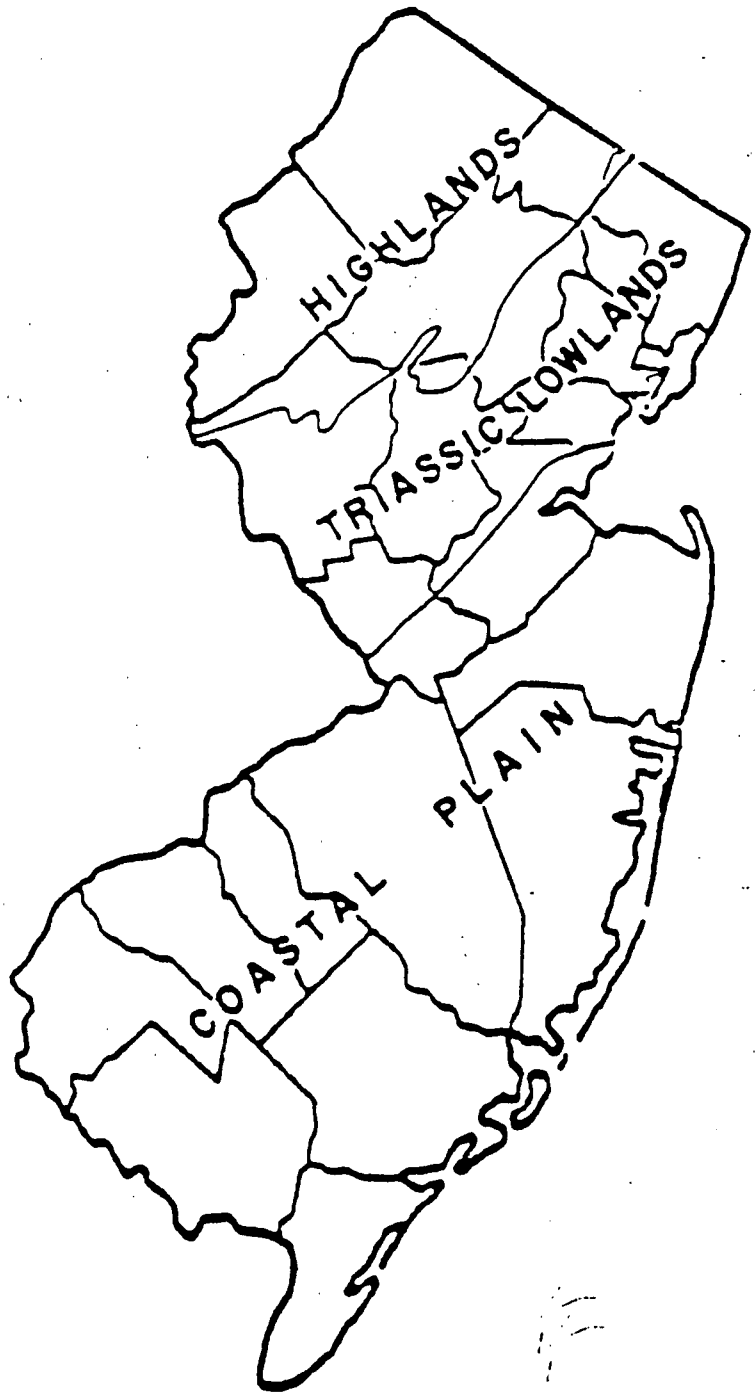

Figure 1 - PRINCIPAL GEOLOGIC REGIONS

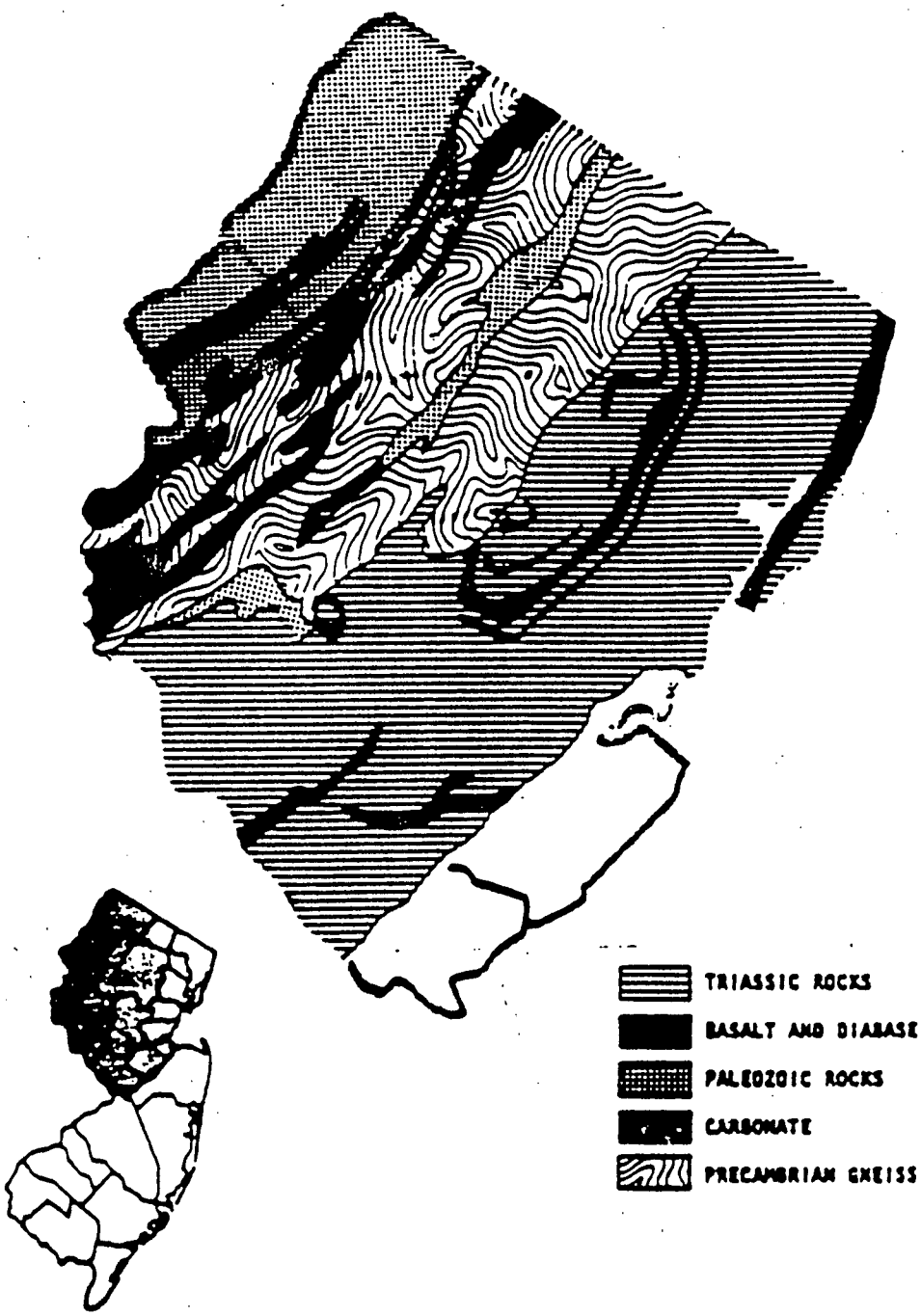

Figure 11 - BEDROCK GEOLOGY IN NORTHERN NEW JERSEY

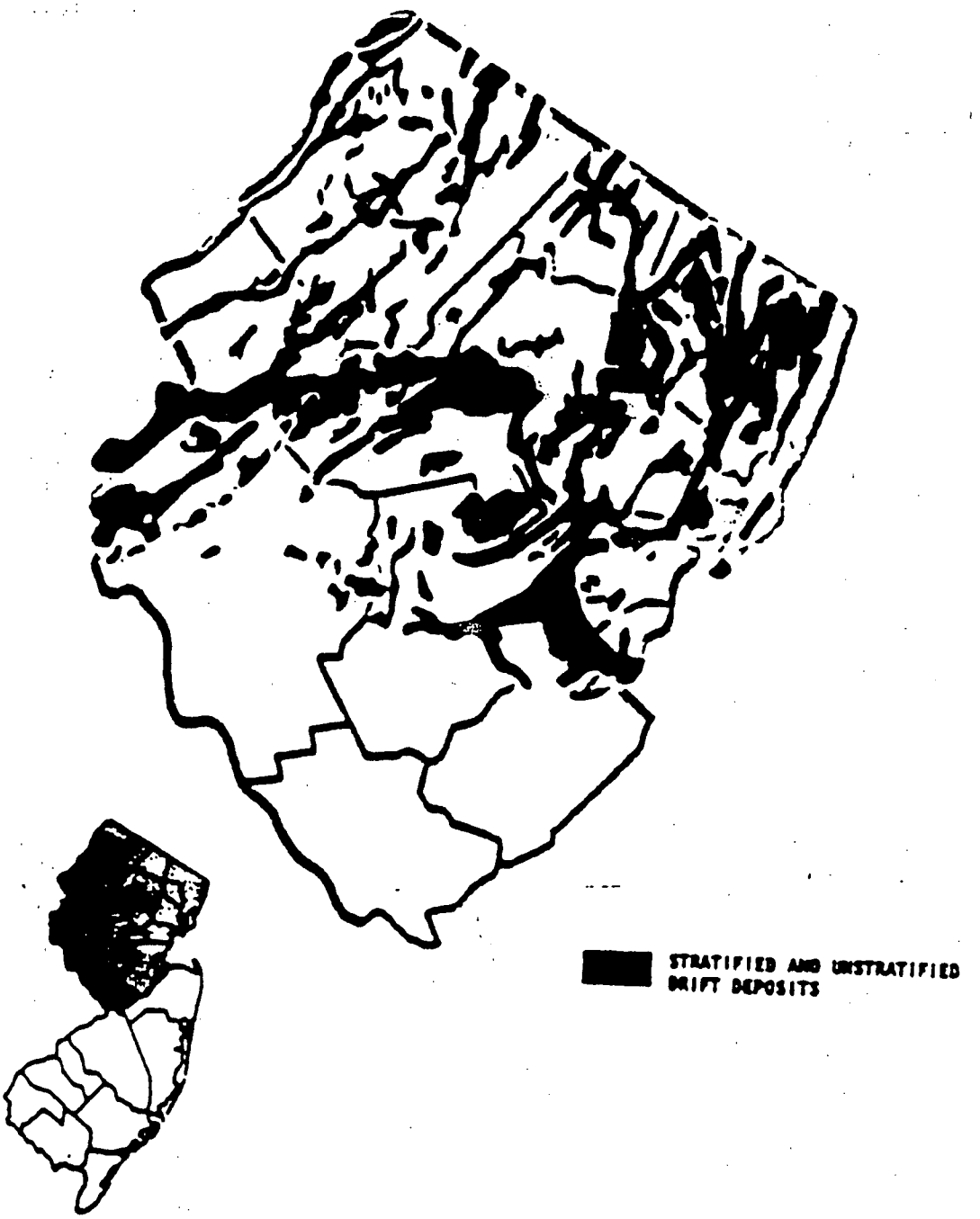

Figure 12 - POTENTIAL UNCONSOLIDATED AQUIFERS IN NORTHERN NEW JERSEY

ATTACHMENT C

GROUND-WATER RESOURCES OF ESSEX COUNTY, NEW JERSEY

By

WILLIAM D. NICHOLS

Hydrologist, U. S. Geological Survey

SPECIAL REPORT NO. 28

1968

Prepared by the U. S. Geological Survey

in Cooperation with the

State of New Jersey

By WILLIAM D. NICHOLS

ABSTRACT

Ground water in Essex County occurs in joints and fractures in consolidated rocks and in the voids of unconsolidated statified drift deposits. Wells in sandstone and shale of the Brunswick Formation of Triassic age yield from 35 to 820 gpm; the most productive water-bearing zones are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the direction of strike of the formation (about N 30° E in Essex County) and least in the direction perpendicular to strike. Wells in the Watchung basalt, which is intercalated with rocks of the Brunswick Formation commonly yield small to moderate supplies but may occasionally yield up to 400 gpm. Large yields, ranging from 410 to 1,593 gpm, are common from wells tapping the stratified drift deposits in the western part of the county.

Quality of ground water is acceptable for most uses throughout the county. However, heavy pumpage in the Newark area has lowered water levels to more than 100 feet below sea level. The low water levels have reversed the natural gradient and induced the flow of salt water into the bedrock aquifer, seriously impairing ground-water quality there. Recent analyses of ground-water samples from Newark indicate that the chloride concentration in the aquifer has increased since the preliminary study of the problem by Herpers and Barksdale in 1951.

Highly productive stratified drift deposits are found primarily in that part of the county west of Second Watchung Mountain. They occur as valley-fill material in stream valleys cut into the underlying bedrock before the last glaciation. These deposits in Essex County are part of an extensive valley-fill aquifer system underlying the eastern Morris-western Essex County area. Water levels in these deposits in western Millburn Township have declined 36 feet since 1950, probably as a result of below normal rainfall for most of the period 1953 to 1966 together with constantly increasing pumpage throughout the area.

Withdrawals of ground water from all aquifers in Essex County for public supply averaged about 26 mgd (million gallons per day) in 1966. Pumpage for public supply from aquifers in unconsolidated sediments averaged 20.9 mgd, about 81 percent of the total from all aquifers.

Most of the productive aquifers in Essex County are currently being developed. Although the optimum potential of the stratified drift aquifers

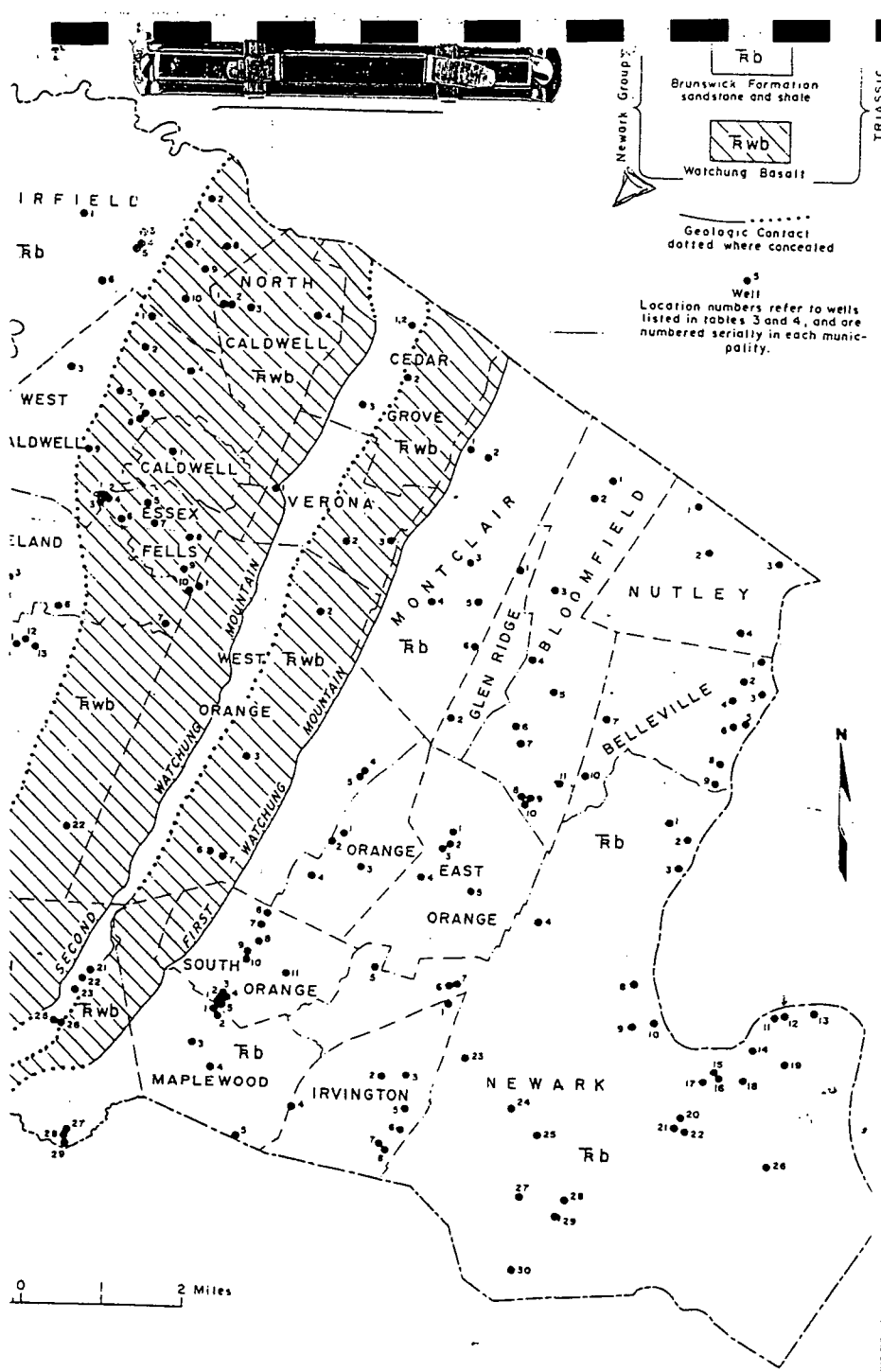

Figure 2.—Generalized bedrock geologic map of Essex County, N. J. showing locations of selected well

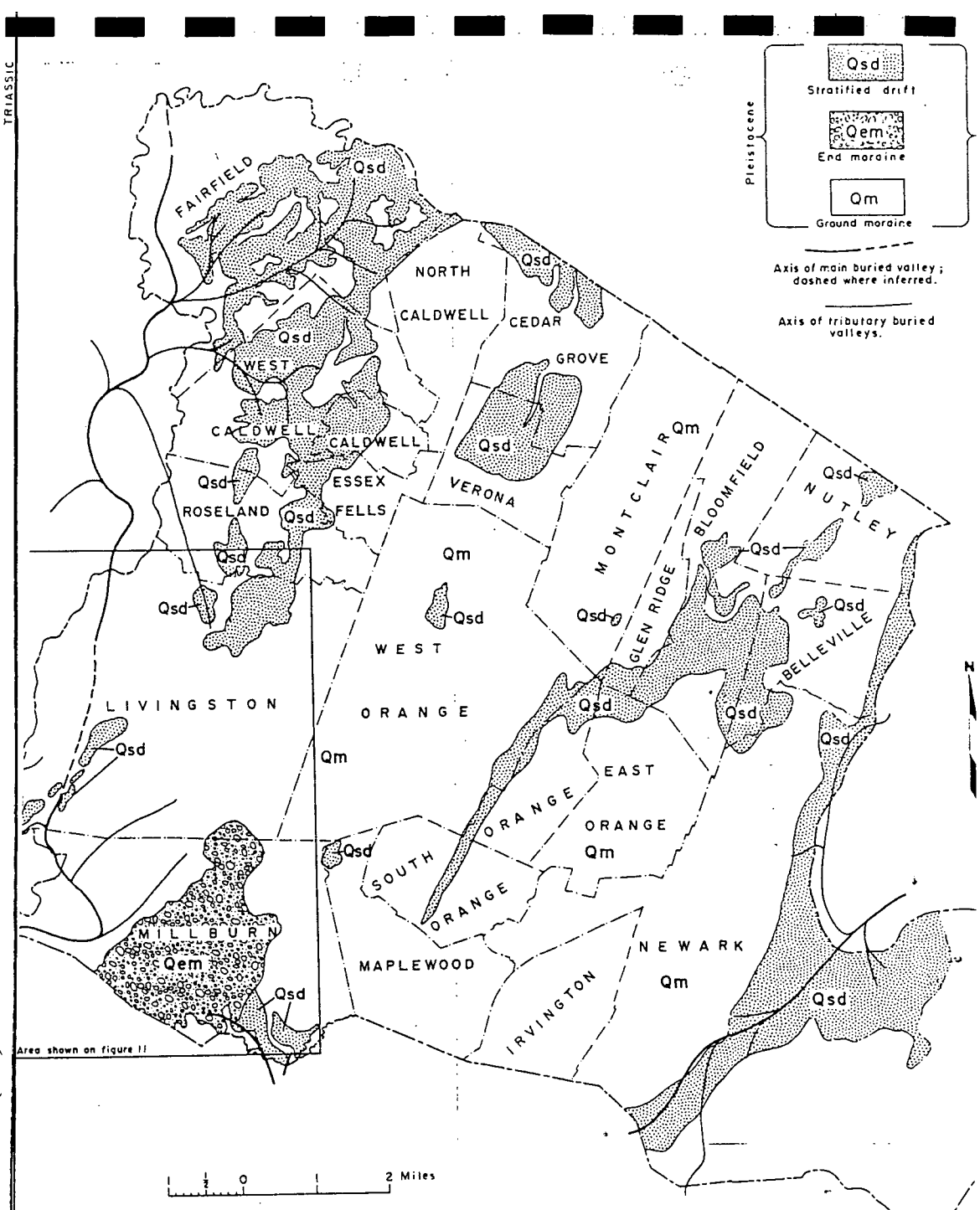

Figure 3.—Generalized surficial geologic map of Essex County, N. J. showing axes of buried valleys.

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EXPLANATION

Well or test boring showing altitude of bedrock surface, in feet referred to mean sea level.

Well or test boring that did not reach bedrock surface showing altitude of bottom of well or test boring, in feet referred to mean sea level.

—100— Bedrock contour shows altitude of bedrock surface, dashed where approximately located. Contour interval 50 feet. Datum is mean sea level.

1000 0 5000 Feet

N

BELLEVILLE

BLOOMFIELD

EAST ORANGE

IRVINGTON

PASSAIC RIVER

ESSEX COUNTY

UNION COUNTY

ESSEX CO.

UNION CO.

NEWARK BAY

in western Essex County and the Brunswick Formation in the northeastern part of the county probably has not been realized, development of these resources must be undertaken with care if anticipated increase in water needs of the county are to be met.

INTRODUCTION

PURPOSE AND SCOPE

This study was made as part of a statewide program of investigation of the ground-water resources of New Jersey, authorized by the New Jersey Water Supply Act of 1958 and its companion, Water Bond Act. The purpose and scope of these studies are to assemble the available data on geologic and hydrologic factors relating to the occurrence, movement, availability, and chemical quality of ground water in New Jersey; to evaluate and interpret the data; and to make the results of the investigation available to the public. This report represents the results of the ground-water investigation of Essex County made by the U. S. Geological Survey in cooperation with the New Jersey State Department of Conservation and Economic Development, Division of Water Policy and Supply. The work was under the general supervision of Allen Sinnott, formerly District Geologist.

LOCATION AND EXTENT OF AREA

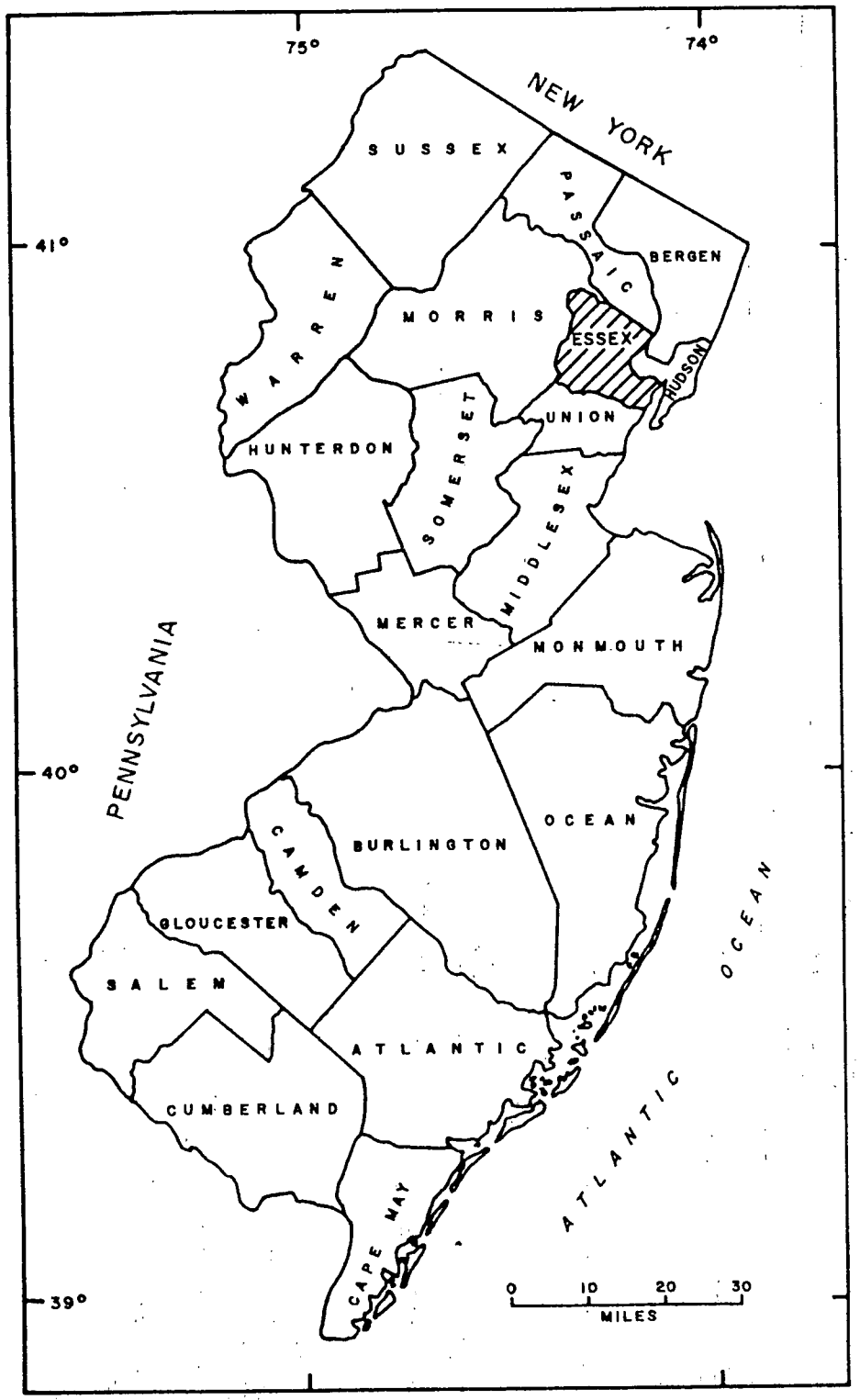
Essex County is located in northeastern New Jersey between longitudes 74°05′W and 74°25′W, and latitudes 40°40′N and 40°55′N. It is bounded on the north by Passaic County; on the east by Bergen County, Hudson County, and Newark Bay; on the south by Union County and on the west by Morris County (fig. 1). The county is 127.44 square miles in area. Newark is the county seat. Other major communities include Orange, East Orange, South Orange, West Orange, Irvington, Belleville, Nutley, Montclair, and Bloomfield.

PREVIOUS INVESTIGATIONS

The geology of Essex County is described in detail by Darton and others (1908) in the Passaic folio. Salisbury (1894) discussed the surficial geology of the county as part of a regional investigation. Rogers and others (1951) described the engineering characteristics of the soils and glacial deposits in the county. Ground-water conditions in the extreme southwestern part of the county were described by Thompson (1932). Herpers and Barksdale (1951) discussed ground-water conditions in the Newark area.

ACKNOWLEDGMENTS

The author wishes to thank the numerous well drillers, State, municipal, and industrial officials and private individuals who supplied data on which this report is based. Acknowledgment is made for the records and logs of wells that were furnished from the files of the New Jersey Bureau of Geology and Topography. The cooperation of those who permitted use of their wells for water-level observation, collection of water samples, and pumping tests is gratefully acknowledged. Most of the well inventory for this report was made by the late O. J. Coskery of the U. S. Geological Survey.



GEOGRAPHY

TOPOGRAPHY

Essex County is situated entirely on the Triassic lowlands of the Piedmont Province, one of six physiographic provinces included in the Appalachian Highland physiographic division. The province consists primarily of lowland and gently rolling hills above which rise the ridges of the Watchung Mountains. Altitudes in Essex County range from sea level in the southeastern part of the county to 650 feet along the ridges of the Watchung Mountains. The escarpment of the First Watchung Mountain, trending from northeast to southwest across the middle part of the county, rises 400 feet above the gently rolling plain to the east; the breadth of the First and Second Watchung Mountains varies from 1 to 2 miles. The major streams draining Essex county are the Passaic, Rahway, and Elizabeth Rivers.

CLIMATE

The climate of Essex County, like that of much of New Jersey, is mainly continental because of the predominance of winds from the continental interior. The prevailing wind is from the northwest from October to April and from the southwest for the remaining months. As a consequence, winter weather is controlled by cold continental air masses and summer by tropical air masses. Precipitation in the county averages more than 48 inches annually, and is commonly well distributed throughout the year. Part of the precipitation is received from storms which cross the Great Lakes region and pass down the St. Lawrence Valley. However, the heaviest general rains are produced by coastal storms of tropical origin. The centers of these storms usually pass some distance offshore, with rainfall heaviest and winds strongest near their center (U. S. Department of Agriculture, page 1010, 1941). The average January temperature for the eastern part of the county is 39°F and that of the western part of the county about 28°F. Average temperatures in July range from about 74°F in the eastern part of the county to about 72°F in the western part of the county.

POPULATION AND ECONOMY

Compared with the other counties in New Jersey, Essex County ranks only nineteenth in area, but ranks first in population as of the 1960 census. The population increased from 905,949 in 1950 to 923,545 in 1960—an increase of 1.9 percent; less than in any preceding 10 year period since 1900, except for 1930-40.

Population of Essex County 1900-60

1900	359,053
1910	512,886
1920	652,089
1930	833,513
1940	837,340
1950	905,949
1960	923,545

Nearly 90 percent of the county's population is located in the 71.5 square miles (55.6 percent of total area) east of the Watchung Mountains.

The economy of Essex County is primarily industrial. The principal manufactured products include food products, electrical goods and machinery, chemicals, machinery (excluding electrical machinery), fabricated metal products, and apparel. In 1960, only about 5 percent of the total land area of the county was utilized as farmland.

GEOLOGY

INTRODUCTION

The Brunswick Formation and Watchung Basalt of the Newark Group of Late Triassic age underlie all of Essex County. The Brunswick Formation is dominantly shale and sandstone, but also includes minor amounts of conglomerate. The Watchung Basalt consists of three extensive sequences of lava flows intercalated with the shale and sandstone of the Brunswick Formation. The generalized bedrock geologic map (fig. 2) shows the areal extent of the rocks of Triassic age underlying Essex County. Overlying the rocks of the Newark Group are unconsolidated clay, sand, and gravel deposited during the Pleistocene and Recent Epochs. Pleistocene deposits are the most widespread and are found throughout the county. Deposits of Recent age are confined to the present-day stream valleys. Figure 3 shows the general distribution of the unconsolidated Pleistocene deposits.

Parts of Fairfield and Millburn Townships and Newark are underlain by valleys cut (fig. 3) in bedrock by streams that drained the area before the last glaciation. The valley were subsequently filled in and buried by glacial debris and have little present-day surface expression.

VALLEY ORIGIN

DISTRIBUTION AND LITHOLOGY OF ROCK UNITS

Consolidated Rocks

Rocks of the Brunswick Formation, the uppermost unit of the Newark Group, underlie most of Essex County. The formation consists dominantly of interbedded brown, reddish-brown, and gray shale, sandy shale, sandstone, and some conglomerate. Three sheets of gray to black basalt are intercalated with sandstone and shale beds of the Brunswick Formation. The total thickness of the Brunswick Formation is not known, but probably exceeds 6,000 feet (Kümmel 1940, p. 102).

In the southern part of the county east of the Watchung Mountains, the Brunswick Formation is predominantly a soft red shale. These rocks become coarser grained toward the north. In the northern part of the county the rocks are mostly sandstone and some interbedded shale; conglomerate is found in the extreme northern part of the county. This change from soft, easily weathered, shale to more resistant sandstone is reflected in the change of topography from the rather flat low-lying plain with few hills in southern Newark to hills of low relief in the northern part of the county.

Between First and Second Watchung Mountains, the Brunswick Formation is dominantly sandstone. West of Second Watchung Mountain, the formation is covered with thick deposits of unconsolidated sediments

of glacial origin and few outcrops can be found. As indicated from records of wells drilled in this area, the rocks are mainly shale and some interbedded sandstone.

Two prominent ridges, First and Second Watchung Mountains, extend from northeast to southwest across the county (fig. 2). These are the two lowest sequences of basalt flows of the Watchung Basalt. The third, uppermost, sequence of flows is represented by Ricker Hill in Livingston Township. These basalt sheets were formed by lava which was extruded at three different times during the accumulation of the sedimentary rocks of the formation. Each of these sheets is made up of several lava flows. Scoriaceous zones occur at the top of many of the individual flows. In some places, thin beds of shale occur between successive flows. The lower part of the Watchung Basalt, which comprises First Watchung Mountain, is from 600 to 650 feet thick; the Watchung Basalt in Second Watchung Mountain varies from 750 to 900 feet in thickness; the uppermost Watchung Basalt ranges from 225 to 350 feet in thickness (Darton and others, 1908, p. 10).

First and Second Watchung Mountains are parallel, and in places have double-crested ridges reflecting the presence of interbedded sedimentary rocks; the ridges generally rise between 300 and 400 feet above the adjacent country. The trend of the ridges reflect the general strike of the sedimentary rocks of the Brunswick Formation. The beds dip about 10 degrees toward the northwest.

Pleistocene and Recent Deposits

Unconsolidated sediments deposited by glaciers or by glacial meltwater during the Pleistocene Epoch cover most areas of Essex County. These deposits can be divided roughly into several types. Unstratified drift called till or ground moraine is a heterogeneous mixture of clay, silt, sand, gravel, cobbles, and boulders which was deposited by the ice. Unstratified drift that has accumulated in a ridgelike deposit along the margin of a glacier is called an end moraine. Stratified drift is deposited by glacial meltwater in streams (glaciofluvial deposits) and lakes (glaciolacustrine deposits). Glaciofluvial deposits are generally stratified sand, and sand and gravel, and glaciolacustrine deposits are usually bedded or laminated silt and clay. Figure 3 is a map showing the generalized distribution of the Pleistocene deposits in Essex County.

Streams and rivers draining the Essex County area before the last glaciation cut deep valleys into the Triassic rocks (fig. 3). These valleys were subsequently buried by glacial debris, and the thickness of the glacial deposits is largely controlled by the underlying bedrock topography. The

altitude of the floor of the buried bedrock valley under the Newark area is as much as 280 feet below sea level (fig. 4), and the glacial drift is as much as 300 feet thick. In the southwestern corner of Essex County in Millburn Township, the altitude of the valley floor is 17 feet above sea level and the drift averages 150 feet in thickness. In the northwestern part of the county in Fairfield Township, the floor of the valley is as much as 35 feet below sea level and the drift has a maximum thickness of about 200 feet. In the areas between the valleys, where the bedrock surface is high, the drift ranges from 0 to 70 feet thick.

East of the Watchung Mountains and west of the buried valley under the Newark area, the glacial deposits consist dominantly of till. The valley under the Newark area, however, is filled largely with stratified drift and interbedded lenses of till. In the central and southern part of Newark the main valley (fig. 4) is filled with as much as 200 feet of lacustrine clay and sandy clay, which is overlain by 50 to 100 feet of other stratified or unstratified glacial drift. In the northern part of Newark, where the valley (fig. 4) parallels the Passaic River, the valley contains several deposits of sand and gravel interbedded with clay and till. The sand and gravel ranges from 1 to 19 feet in thickness and is encountered mostly at depths of less than 50 feet and depths of more than 220 feet below land surface.

The present-day valley between First and Second Watchung Mountains is underlain by approximately 100 feet of stratified drift in both Cedar Grove in the north and Millburn Township in the south. These deposits consist mostly of stratified sand and gravel. Their maximum thickness appears to occur under that part of the valley west of the Rahway and Peckman Rivers; east of the rivers, the bedrock surface is shallow (30 to 50 feet below the valley floor), and the unconsolidated deposits are thin. There are not enough data to define the thickness and character of the subsurface glacial deposits in the valley in Verona and most of West Orange.

West of Second Watchung Mountain, the stratigraphy of the glacial deposits is moderately complex, especially in the buried valleys. The drift in the main buried valley in Livingston and Millburn Townships (fig. 3) has a maximum thickness of about 170 feet and consists of interbedded sand, sand and gravel, clay and till. Thicknesses of sand and gravel outwash range from 20 to 80 feet. Farther north, in north-western Fairfield, the main buried valley (fig. 3) is filled with as much as 200 feet of drift consisting almost exclusively of 140 to 170 feet of laminated silt and clay underlain by 10 to 30 feet of till. Deposits of fine- to medium-grained sand ranging in thickness from 0 to 20 feet occur on the surface.

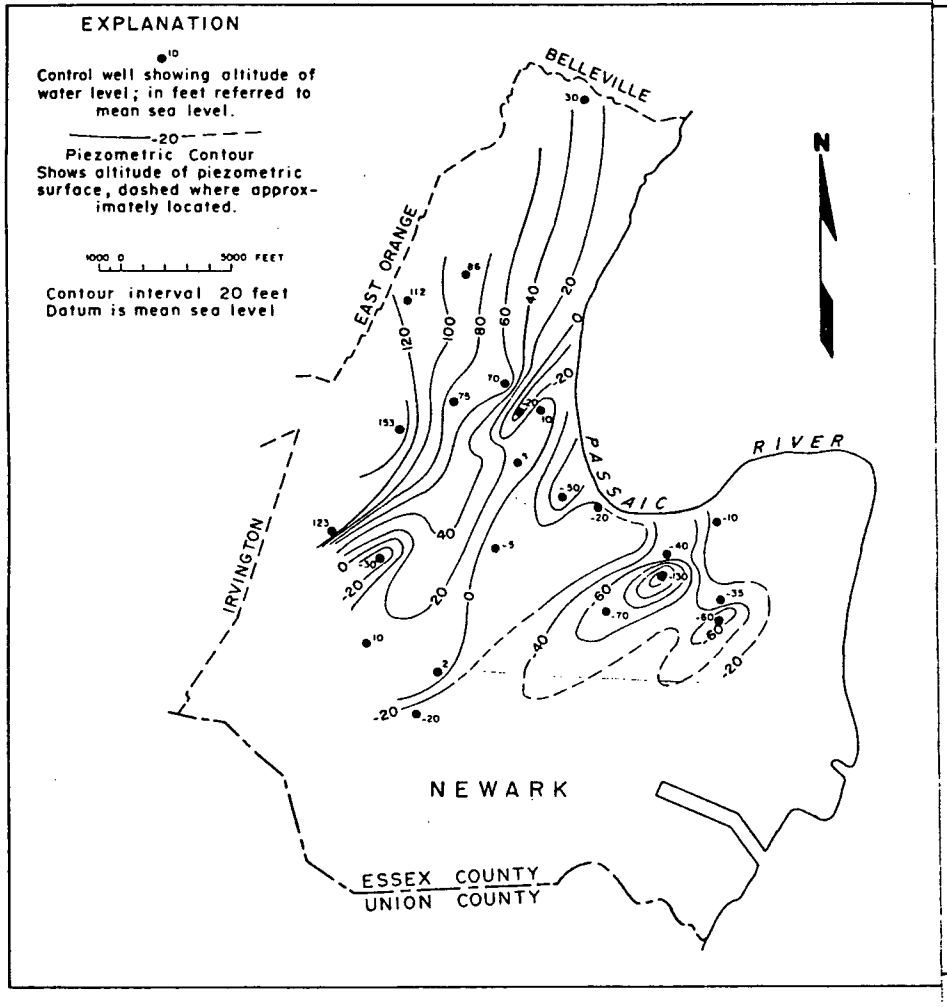


Figure 9.—Generalized piezometric contours for the Brunswick Formation in the Newark area based on water levels in wells drilled between 1890 and 1900.

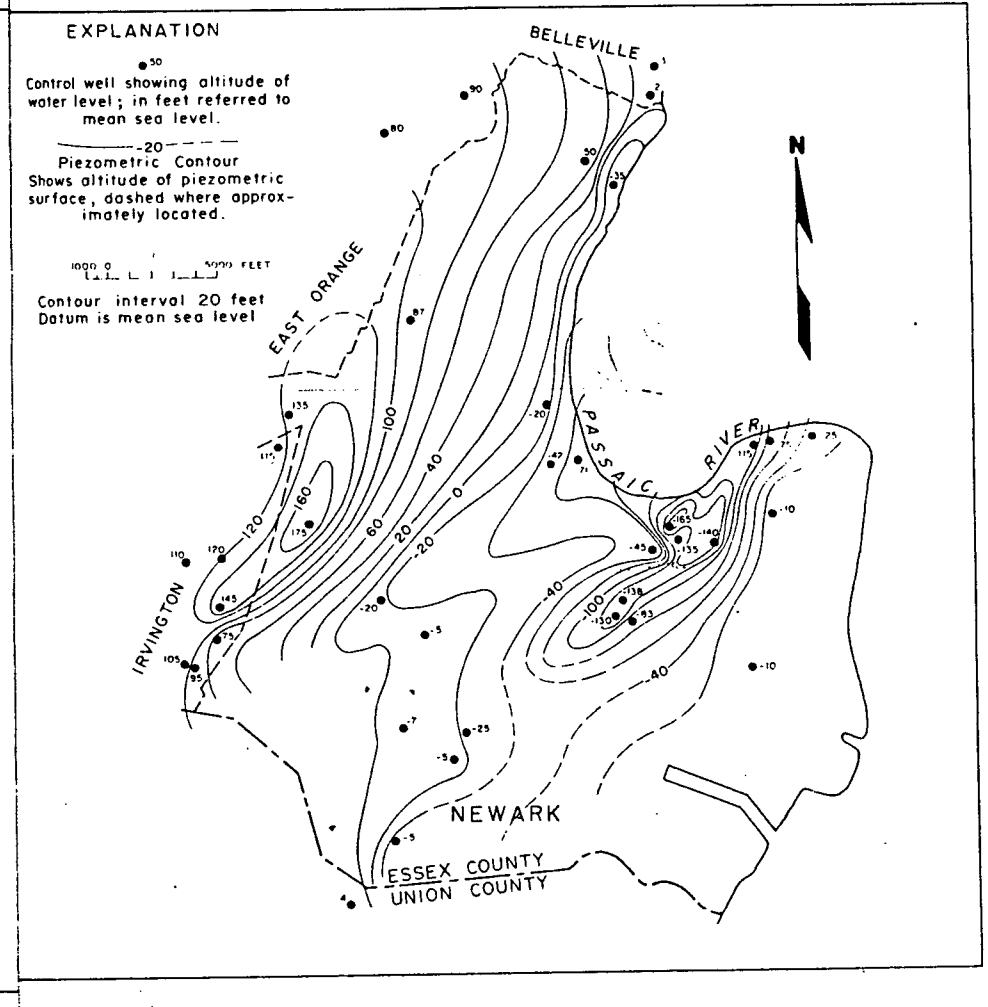


Figure 10.—Generalized piezometric contours for the Brunswick Formation in the Newark area based on water levels in wells drilled between 1950 and 1960.

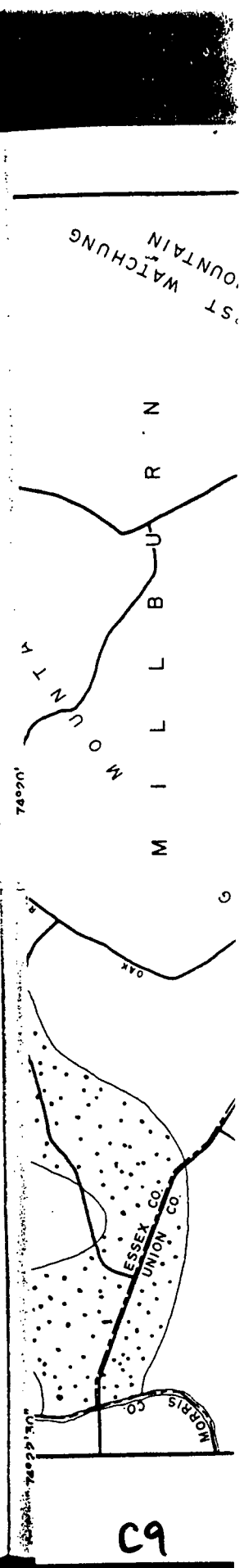
Salt-water contamination of the Brunswick Formation in the Newark area has been investigated by Herpers and Barksdale (1951). Their study was based on analyses of water samples collected in 1942 by the city of Newark. More recent analyses suggest there has been additional encroachment of saline water since 1942 throughout the problem area. In 1942, water from the Wilbur Driver Company's well No. 2 along the Passaic River in northern Newark contained 72 ppm chloride. In 1961, water from this same well contained 330 ppm chloride. Water from a well drilled by Mutual Benefit Life Insurance Company, 520 Broad Street, in 1965 contained 1,145 ppm chloride. Samples collected from other wells in this area contained less than 500 ppm chloride in 1942.

Pleistocene Deposits

Unconsolidated sediments of Pleistocene age mantle the bedrock throughout much of Essex County (fig. 3). They consist of clay, silt, sand, gravel, and boulders and can be divided into two general categories—stratified drift and unstratified drift. Only sand and gravel aquifers in stratified drift deposits contain sufficient quantities of water to warrant discussion of their water-bearing properties.

Water in the stratified drift occurs under both unconfined (water table) and confined (artesian) conditions. Unconfined ground water occurs where sand and gravel deposits are not covered by clay, silt, or glacial till and are exposed at the surface. The distribution of these deposits is shown on figure 3. For the most part however, these sand and gravel deposits do not yield large quantities of water as they are commonly less than 20 feet thick and are not areally extensive. The unconfined aquifers are recharged directly from precipitation on the outcrop area. Confined and semiconfined ground water occurs where sand and gravel deposits have been covered by lake clay or silt, or by glacial till. These deposits are largely confined to the buried valley so they are not visible on the surface and their regional extent and distribution are therefore not readily apparent. The confined and semiconfined aquifers are recharged by leakage through overlying confining beds and by precipitation falling on outcrop areas outside Essex County. Some recharge may also be derived from the underlying and adjacent Brunswick Formation.

The most productive artesian and semi-artesian aquifers in the stratified drift in Essex County occur as valley fill in stream valleys that were cut in the bedrock before the last glaciation. Consequently the size, shape, and distribution of the aquifers conform to the size, shape, and distribution of the bedrock valleys. The bedrock valley underlying the Newark area (shown on fig. 4) is filled with till and clay, and contains only minor amounts of water-bearing sand. Extensive subsurface exploration in western



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Essex and eastern Morris Counties has demonstrated that the valley-fill aquifers in Essex County are part of an extensive valley-fill aquifer system underlying much of these two counties (Vecchioli and others, 1968). Figure 11 shows the known distribution of valley-fill aquifers in western Essex County.

The most highly developed part of the valley-fill aquifer system is in western Millburn and southwestern Livingston. Four well fields tapping the Pleistocene sand and gravel are located in an area of less than 4 square miles. During 1965 an average of 13.6 mgd (million gallons per day) was pumped from these fields. Such continued heavy development has, naturally, lowered water levels in the aquifer. In 1925, the depth to water in the Canoe Brook well field of Commonwealth Water Company was about 30 feet below land surface. By 1965, the average depth to water in the same field had dropped to 83.5 feet below land surface.

Figure 12 shows the annual mean depth to water in the Commonwealth Water Company's Canoe Brook well field for the 20-year period 1947 to 1966. The water level has declined almost continuously since 1947. This is due in large part to increased demands placed on the adjacent Canoe Brook well fields of the Commonwealth Water Co. and East Orange Water Dept. for most of the period 1947 to 1961. Commonwealth Water Company's Passaic River well field was put into service in 1956 and although the demands on their Canoe Brook field were lessened, the combined pumpage (not shown) continued to increase. However, in spite of the fact that from 1961 to 1966 pumpage from the Commonwealth and East Orange Canoe Brook fields decreased, the water level in the Commonwealth Canoe Brook field continued to decline (fig. 12). Several factors probably have caused this continuing lowering of water level. The Passaic River well field taps the same aquifer and withdrawals there have undoubtedly had some effect on area water levels. In addition, Commonwealth's Canoe Brook well field area has had below average rainfall for 12 of the 13 years since 1953 with a consequent reduction in the amount of available recharge. The reduction in recharge together with increased demands during extended dry periods, especially from 1961 to 1966, have contributed to the steady decline of the water level in the aquifer.

Aquifer tests on the stratified drift deposits have been conducted by the U. S. Geological Survey at two localities in Essex County and at several places in Morris County. The reliability of the results of these tests are questionable for the following reasons: (1) the aquifers are not areally extensive; (2) it is impossible to control or eliminate outside interference; (3) it is seldom possible to establish pre-test water-level

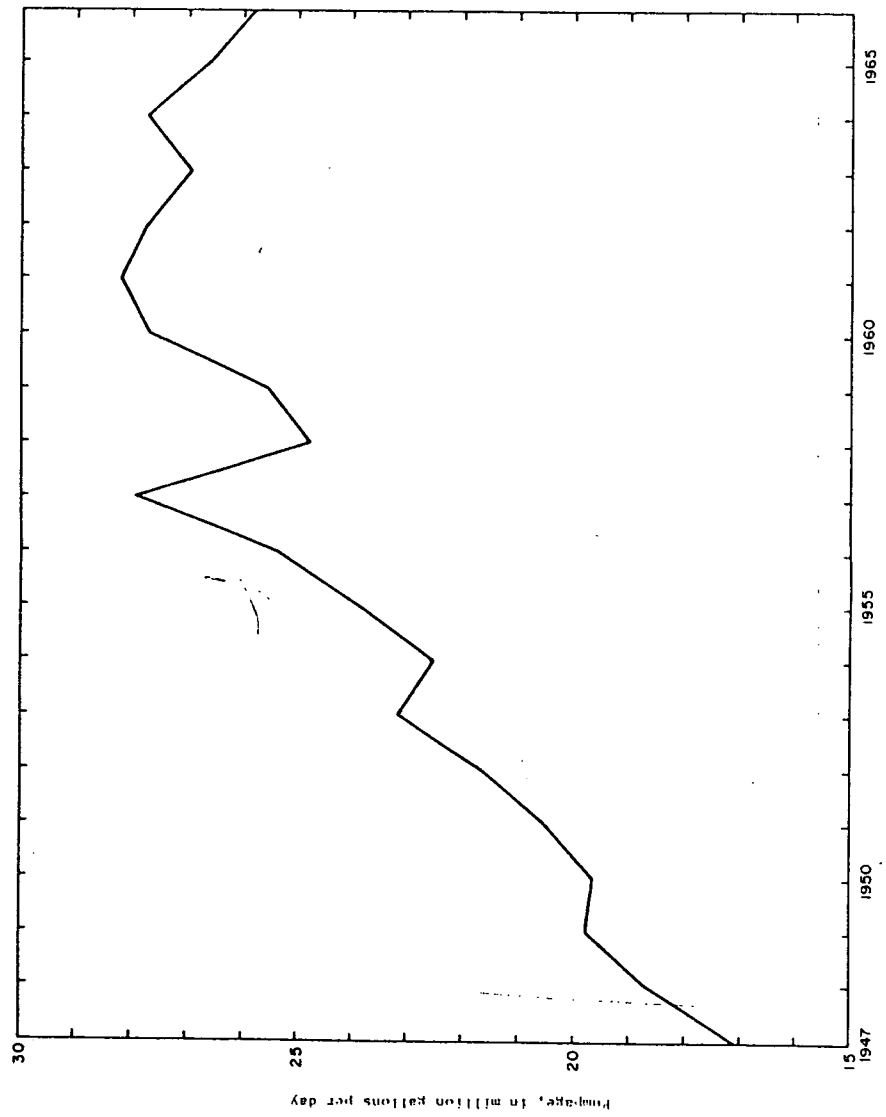


Figure 13.—Ground-water pumpage for public supply, 1947 to 1966.

The aquifers of the Brunswick Formation under part of the Newark area are currently overdeveloped and potable ground water is being mined. Water levels in this area will remain excessively low, as they have for the past 70 years, even if no additional development is attempted. Extensive development of the Brunswick Formation in western Essex County may have an adverse effect on water levels in the overlying stratified drift deposits since some of the recharge to these deposits may be derived from the underlying rocks.

The extent and distribution of aquifers in the stratified drift deposits have been fairly well determined for most of the western part of the county. These aquifers are being utilized throughout much of this part of the county and have been highly developed in parts of Millburn and Livingston Townships. Although the full potential of these deposits has probably not been realized, their optimum potential will not be known until more detailed hydrologic studies are made on the entire aquifer system.

ATTACHMENT D

THE GEOLOGY OF NEW JERSEY

By

J. Volney Lewis and Henry B. Kümmel (1914).
Revised and rewritten by Henry B. Kümmel (1938-40)

CHAPTER I.

GEOGRAPHY OF NEW JERSEY.

Location and Area.

New Jersey is a portion of the Atlantic slope of North America, (Fig. 1, Pl. II) and lies between the parallels of 38° 55′ 40″ and 41° 21′ 22.6″ north latitude and the meridians of 73° 53′ 39″ and 75° 35′ 00″ west longitude. The State is limited by natural boundaries—rivers, bays, and the ocean—on all sides except the northeast, where the New York-New Jersey line runs across the country from the Hudson to the Delaware, a distance of 48 miles.

The extreme length of the State from the most northerly point near Port Jervis to Cape May, is 166 miles. From Trenton to the head of Raritan Bay, across the narrowest part of the State, the distance is only 32 miles. The portion of the State north of this line is nearly square and is about 55 miles across in a northwest-southeast direction and 65 miles from northeast to southwest. The southern portion of the State, which is 36 miles across from Bordentown to the shore, gradually broadens southward to a maximum width of 57 miles a little south of the line from Camden to Atlantic City. The length of this southern part, from Raritan Bay to Delaware Bay, is 100 miles.

The land area of the State is 7,514 square miles, and 710 square miles of water—bays, harbors, lakes, etc.—lie within its borders, making a total area of 8,224 square miles.[1]

Geographic Provinces

The Atlantic slope of the United States is included in two geographic and geologic provinces: (1) the Coastal Plain, which borders the Atlantic from the Gulf of Mexico to the Hudson and which is represented northward to Massachusetts Bay by several islands and the peninsula of Cape Cod; (2) the Appalachian province, which extends from the Coastal Plain westward to the Mississippi lowland and from central Alabama northeastward into Canada. The boundary between the two provinces runs obliquely across New Jersey in a nearly straight line through Trenton and New Brunswick, (Pl. II, Fig. 1).

[1] The recent decision of the U. S. Supreme Court regarding the boundary between New Jersey and Delaware within the 12-mile circle from New Castle, may subtract a small amount from this figure.

Each province is a fairly distinct geologic and physiographic unit whose general geologic history, as recorded in its rocks, its structures, and its physiography, is nearly the same throughout all its parts. The two provinces differ from each other, however, in their rocks and geologic structure and hence have had dissimilar histories.

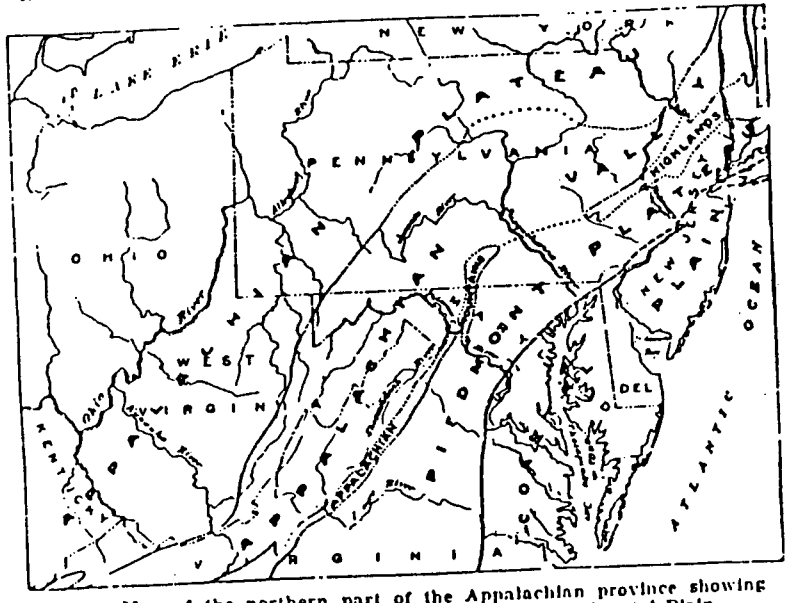


Fig. 1. Map of the northern part of the Appalachian province showing the physiographic divisions and its relation to the Coastal Plain.

APPALACHIAN PROVINCE.

The four major divisions of the Appalachian province, named in order from west to east, are (1) the Appalachian Plateau, (2) the Appalachian Valley, (3) the Appalachian Mountains, and (4) the Piedmont Plateau. All but the first of these enter New Jersey.

The Appalachian Valley.—This is a broad belt of valleys and subordinate ridges lying between the Appalachian Mountains on the east and the Appalachian Plateau on the west and extending throughout the length of the province. Its surface is in general much lower than that of the adjacent divisions, though in parts of its length the crests of some of the subordinate ridges which traverse it have about the same altitude as the Appalachian Plateau to the west. These ridges and the intervening valleys are

narrow, and like the great valley itself, have a pronounced north-east-southwest trend.

From Virginia southwestward the minor ridges become progressively lower and the belt as a whole is occupied by a broad valley—the Valley of East Tennessee and the Coosa Valley of Georgia and Alabama. From Virginia to New York State the western side of the valley belt is broken by high, sharp ridges and only the eastern side is occupied by the great valley, to which various local names are given. Northeast of the Hudson the divisions of the province lose much of their definite character, but the Appalachian Valley is continued in the Champlain Valley of western Vermont.

In New Jersey (Pl. II) the Appalachian Valley contains a large part of Warren and Sussex counties and has an area of 635 square miles—a little more than one-twelfth of the State. Its eastern part is occupied by the broad Kittatinny Valley and the western part by the narrow valley of the upper Delaware, the two being separated by the bold, even-crested ridge of Kittatinny Mountain, which, although one of the ridges of the Appalachian Valley belt, reaches a greater altitude than the Highlands east of the valley.

The portion of the Kittatinny Valley within the State is 40 miles long and about 12 miles wide. Its plains and bottom lands lie between 400 and 600 feet above sea level and its hills and ridges rise to elevations of 800 to 1000 feet. The valley lands in the narrow upper Delaware Valley are about 500 feet above sea level whereas the river itself drops from 409 feet at the New York State line to 287 feet at Delaware Water Gap. The even crest of Kittatinny Mountain, the bold ridge that separates the two valleys, is 1,600 to 1,800 feet high and attains a maximum elevation of 1,804[1] feet at High Point, the highest in the State. The mountain varies in width from 1 to 5 miles (Fig. 9 and 10).

The Appalachian Mountains.—The Appalachian Valley is bounded on the east by the Appalachian Mountains, which in the Middle Atlantic States form a rather narrow belt of irregular, more or less interrupted ridges, nowhere of great altitude, but as a rule rising rather abruptly from the lower country on either side. South of the Potomac the belt is broader, in western North Carolina reaching a width of 60 miles and culminating in the

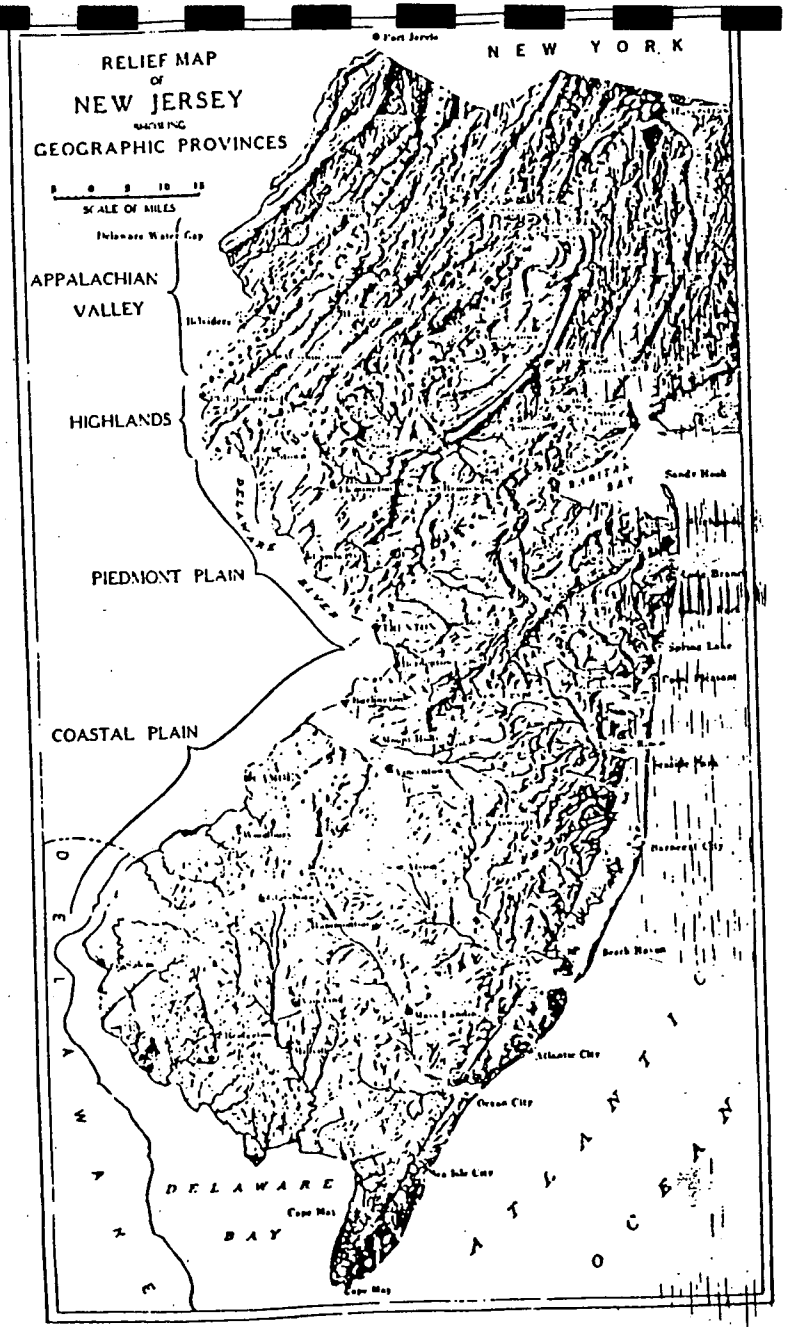
[1] Top of a glacial bowlder which formerly rested on the highest point of bed rock. The elevation given on the tablet attached to the base of the monument is incorrect if intended to give the elevation of the crest of the mountain before the monument was erected.

highest summits of eastern North American. In the southern Appalachians the rather sinuous divide between the streams flowing to the Ohio and those flowing directly to the Atlantic is called the Blue Ridge. For much of its length the Blue Ridge defines the eastern limit of the Appalachian Mountain belt and forms a bold scarp facing southeast, toward the Piedmont Plateau.

In New Jersey (Pl. II) the Appalachian Mountains form a belt from 10 to 25 miles wide, known as the *Highlands*, which crosses the northern part of the State southeast of Kittatinny Valley. The Highlands have an area of 900 square miles (about one-eighth of the State) and an average elevation of about 1,000 feet above sea level. They are chiefly in northern Hunterdon, Morris, and Passaic counties and the southeastern borders of Warren and Sussex. Their maximum elevation is 1,496 feet midway between Canistear and Vernon in Sussex County. Bearfort Mountain reaches 1,491 feet and there are several points on Wawayanda and Hamburg mountains in Sussex over 1,400 feet above sea level. Sparta Mountain, 2 miles southwest of Stockholm is 1,406 feet, but none to the South and east reaches 1,400 feet. The Highlands gradually descend to Ramapo Mountain on the southeastern border, with a maximum elevation of 1,171 feet, and to Musconetcong Mountain at the southwest, with a maximum altitude of 987 feet and its southwest end near the Delaware a little below 800 feet. The valleys range from 500 to 800 feet above sea level. The lower Pohatcong, Musconetcong and Wanaque valleys are below 500 feet.

In general the Highlands consist of several broad, rounded or flat-topped ridges, rising 400 to 600 feet above the lowlands on either side and separated from each other by deep and generally narrow valleys. The larger topographical features of the Highlands, like those of the Appalachian Valley, show a marked northeast-southwest trend, although the ridges are much broader and more massive and many of the minor features are irregular. Some of the prominent valleys, such as the Rockaway, the Pequannock, and the Delaware, are transverse to the general trend. Near the Delaware the Highlands are lower and are broken by broad interhighland valleys. They continue southwestward into Pennsylvania for a few miles as low, irregular ridges; northeastward in New York they extend to and across the Hudson, beyond which they lose their distinctive character.

The Piedmont Plateau.—The easternmost division of the Appalachian province, lying east and southeast of the mountain



belt, is the Piedmont Plateau. In New Jersey and southward it is bounded on the east by the Coastal Plain. Its surface is that of a dissected plateau or plain which slopes gently eastward or southeastward from the base of the Appalachian Mountains and is broken here and there by knobs or ridges that rise several hundred feet above its surface. In the southern Appalachian region, where it lies well inland, the Piedmont Plateau stands at a considerable altitude and constitutes a true plateau, but toward the northeast it becomes a low plain, more or less hilly, and in the vicinity of Newark Bay it falls to sea level.

In New Jersey (Pl. II) this Piedmont Plain, as it may be more appropriately called, occupies the southeastern portions of Hunterdon, Morris and Passaic counties, large areas of Mercer, Somerset, and Middlesex, and the whole of Union, Essex, Hudson, and Bergen counties. It is chiefly a lowland of gently rounded hills separated by wide valleys, with some ridges and isolated hills rising conspicuously above the general surface, which slopes gently from about 400 feet above sea level at its northwestern margin to about 100 feet along its southeastern border near the Delaware and to sea level about Newark Bay.

The Piedmont Plain constitutes about one-fifth of the State, an area equal to both the other divisions of the Appalachian province. The low hilly or rolling plain that constitutes the greater part of its surface is divided into several somewhat distinct portions by higher ridges, several of which are locally called mountains. The general level of both the ridges and the plain declines toward the southeast. North of Paterson and Hackensack much of the country is about 300 feet above sea level, while the flats of the upper Passaic Valley and the broad rolling plains of the Raritan Valley are mostly below 200 feet. Along the lower course of the Hackensack the plain dips below sea level and south of Englewood large areas are covered by tidal marsh.

The Watchung Mountains attain their maximum elevation in High Mountain, a peak north of Paterson, which is 879 feet above sea level. Camp Gaw Hill is 752 feet. Between Paterson and Summit, First Mountain ranges from 550 to 691 feet; further south its crest is between 450 and 539 feet. The corresponding portions of Second Mountain have elevations of 500 to 665 feet and 530 to 635 feet, respectively. The Palisades decline from 547 feet near Closter to 40 feet above tide at Bayonne. The crest of Cushetunk Mountain is mostly above 600 feet and rises to a maximum of 839 feet. Sourland Mountain has a maximum

elevation of 563 feet near its northeast end and most of its crest is above 450 feet. The Hunterdon Plateau, which occupies the west side of Hunterdon County, has a maximum elevation of 913 feet; at Cherryville it is 706 feet and it declines southwestward to about 500 feet near the Delaware.

THE COASTAL PLAIN PROVINCE.

General statement.—The Piedmont is the most easterly division of the Appalachian province. Between it and the coast, from New York Bay southward, lies the Coastal Plain, which forms the eastern margin of the continent and in both geologic and geographic features is essentially unlike the Piedmont. Its surface has a gentle slope to the southeast, along some parts of its inland border as much as 10 to 15 feet to the mile, but generally over the greater part of its surface the slope does not exceed 5 or 6 feet to the mile.

The surface of the Coastal Plain extends eastward with the same gentle slope beneath the water of the Atlantic for about 100 miles, where at a depth of approximately 100 fathoms, it is bounded by a steep escarpment, along which the ocean bottom descends abruptly to abyssal depths. This submerged part of the Coastal Plain is known as the *continental shelf*, and the steep escarpment which bounds it on the east is the *continental slope*. In the South the subaerial portion expands to 150 miles, while the submarine portion dwindles in width and along the eastern shore of Florida almost disappears. Northward the submarine portion increases in width, while the part above sea diminishes and beyond New Jersey becomes a fringe of islands and the peninsula of Cape Cod. Further northward the subaerial portion disappears altogether through the submergence of the entire Coastal Plain.

The moderate elevation of the Coastal Plain, which in a few places reaches 400 feet and is for the most part less than half that amount, has prevented the streams from cutting valleys of any considerable depth. Throughout the greater portion of the plain, therefore, the relief is inconsiderable, the streams flowing in open valleys that lie at only slightly lower levels than the broad, flat divides.

The subaerial portion.—All of New Jersey (Pl. II) southeast of a line through Trenton and New Brunswick, about three-fifths of the entire area, belongs to the subaerial Coastal Plain. It in-

horizontal locations. These methods have not only greatly increased the number of soundings possible in a given time, but have given much more accurate control of horizontal location.

The continental shelf off the New Jersey coast slopes seaward for about 100 miles at an average gradient of 6 feet per mile to a depth of about 600 feet (100 fathoms). It bears the wave-built sand bars that fringe the coast and the sand flats and marshes that in places unite the bars to the Coastal Plain. The predominant topography of the shelf is a very gently inclined plain marked in general by "northeast-southwest trending bars and lagoons with occasional prominent terraces, steep on the seaward sides; in short, the forms are easily recognizable as marine made or heavily modified by marine erosion."[1]

The continental slope. The topography of the continental slope below 600 feet stands in marked contrast to that of the continental shelf. It drops from 600 feet to 8,000 feet below sea level in about 50 miles—an average gradient of 150 feet per mile—and in a few sections the descent is as steep as 700 feet per statute mile.[2] Deep canyons cross the continental slope and in some cases their heads deeply indent the shelf and lie northwest of the 100-fathom line. The submerged valley across the continental shelf opposite the mouth of the present Hudson River has long been known, but only recently have soundings been sufficient to outline accurately its dimensions and gradients.

These have disclosed a channel 2 to 6 miles in width, 60 to 120 feet in depth below the adjacent ocean floor, with a maximum depth below sea level of 290 feet. This submerged valley extends for about 100 miles in a southeasterly direction from near Sandy Hook to within about 20 miles of the outer edge of the continental shelf. Here it drops abruptly into the head of a great canyon which is cut in the continental slope and the seaward margin of the shelf.

This submerged canyon has a maximum depth below its rim of 3,720 feet, a width from rim to rim of 6 miles at its deepest point and a gradient from 150 feet (average) to 272 feet per mile (maximum).

It is generally agreed by geologists that the 100-mile channel across the shelf is a former course of the Hudson River cut in

[1] A. C. Veach and P. S. Smith — Special Paper No. 7, Geol. Soc. of Amer. p. 13.
[2] Veach and Smith — loc. cit.

relatively recent geologic time (late glacial) when the sea level stood 250 to 305 feet lower than at present (pp. 145 and 170).

The fact that this channel leads into the head of the Hudson canyon suggests at once that the canyon also marks a former extension of the Hudson River. Supporting this view also is the fact that the canyon possesses in a marked degree many characteristics of valleys cut by subaerial erosion, so that not a few geologists have adopted the view that not only the channel across the *shelf*, but also the canyon across the *slope* are due to subaerial erosion. The adoption of this view, however, seems to involve an insuperable obstacle. It is one thing to explain a lowering of sea level 250 or 300 feet in comparatively recent geologic time due to accumulation on the land of glacier ice over thousands of square miles, and it is another thing to explain a sinking of sea level of 7,200 or 7,500 feet; and after a long enough time to erode the canyon to its present width and depth, to restore the ocean to its present level. Where did the water go to and what brought it back again?

But the Hudson Canyon is not the only puzzle of this kind. Similar canyons, but smaller in size occur at 25 other points along the continental slope from the Georges Banks 130 miles southeast of Nantucket Island near Cape Cod to a point east of the mouth of Chesapeake Bay, south of which detailed soundings have not been published. In no other cases than the Hudson can the canyons be traced headward entirely across the shelf into direct connection with existing rivers on the mainland. In many cases they are limited entirely to the continental slope east of the 100 fathom line, but others have worked headward and nicked the margin of the shelf for variable distances up to 20 miles. While explanations have been offered to account for these canyons there is as yet no unanimity of opinion regarding their origin.

Relation of Topography to Geology.

General statement.—The striking differences in the surface features—hills, plains, mountains—that characterize the different portions of the State as described in the preceding pages are the result of long continued exposure to weathering and erosion of rocks that vary greatly in resistence in the different regions and that also have very different structures or modes of arrangement.

[1] A. C. Veach and P. S. Smith. loc. cit. Plate 2.

The conditions under which they were formed and the successive steps in the development of these surface features will be considered at length. It is sufficient here to emphasize the fact that with the exception of a few relatively minor details, the present surface features are due almost entirely to erosion of older and higher land masses. The greater hills and the mountains of the State have their present elevation not because they have been uplifted relative to the adjoining lower areas, but because generally speaking they are of harder rock and have been eroded less rapidly. Whatever movements of elevation or subsidence have taken place at different geologic periods (and they have been many and profound), have affected wide areas and the State as a whole has been uplifted, depressed, or tilted.

This is a conception which the non-technical reader may find difficult to comprehend. The mind naturally assumes that the prominent hills and mountains rise above the lowlands at their base, because they have been "pushed up" by some internal forces, which were not effective in the lowland region. It is true that volcanoes are built up above their surroundings by the accumulation of material ejected from their craters and that in young and growing mountain regions, belts in which the strata are being compressed into folds may rise above the adjoining areas where the rock layers remain undisturbed. But these exceptions do not apply to New Jersey. There are no volcanic cones in this State, and the folds and faults which characterize the rock of three of the geographic divisions were formed so long ago, that whatever elevations resulted from those movements, have long since been worn away.

The present surface features, are, therefore, with very minor exceptions the result of long-continued weathering and erosion over tens and even hundreds of millions of years, on rocks of different degrees of resistence and of different modes of arrangement. The minor exceptions are chiefly due to the irregular accumulation and deposition of glacial drift and wind-blown sand.

Drainage.

The present streams.—The Hudson and Delaware rivers flow in a general southerly direction obliquely across the eastern part of the Appalachian province, and the part of the province in New Jersey is drained by tributaries of these rivers or of Newark and Raritan bays. Kittatinny Valley is drained in part northeastward into the Hudson, in part southwestward into the Delaware. The western part of the Highlands is drained by tributaries of the Delaware, the southern and southeastern Highlands by tributaries of the Raritan, and the northern and northeastern Highlands chiefly by tributaries of the Passaic. The Raritan and Passaic flow into the Raritan and Newark bays, respectively.

Three-fourths of the broad low belt that stretches across the State from Trenton to Raritan Bay, along the northern border of the Coastal Plain, is drained by tributaries of the Raritan, while short tributaries of the Delaware drain a small area about Trenton. This divide is continued southward approximately parallel to the Delaware and to the coast and separates the plain into two unequal slopes, the shorter and steeper one forming the east side of the Delaware Valley and draining by numerous short tributaries into that river, and the longer and gentler slope draining directly into the Atlantic, except the tributaries of the Raritan at the north and the Maurice River at the south, the latter flowing into the lower Delaware Bay.

Throughout most of its length the divide between the two slopes of the Coastal Plain lies within 15 miles of Delaware River, but the Rancocas has pushed its headwaters back to double this distance so that the divide south of Whitings lies within 15 miles of Barnegat Bay. The principal rivers draining the long southeastern slope are the Maurice, the Great Egg Harbor, and the Mullica, while the smaller Toms, Manasquan, and Navesink lie further north where the Coastal Plain is narrower and the eastern slope shorter.

Earlier drainage.—The above paragraphs relate to the drainage as it exists at present, but as will appear in the following pages, not only have there been great changes throughout geologic time in the general relation of sea and land, but also of mountains and valleys. Large parts have been repeatedly and on occasion the entire State has probably been submerged beneath the sea. Upon re-emergence of the ocean floor a new system of drainage was established which was adjusted to the slope of that surface, but which may have had no relation to the older drainage of the region before subsidence. Some of these ancient changes will be discussed in later pages.

With the erosion of the later sediment the rivers were superimposed upon the underlying older topography, often in positions which they could not have attained had their courses been directed by these older hills and valleys. The course of the Dela-

ware River or its ancestor through Kittatinny Mountain at the Delaware Water Gap may be a case in point.[1]

References.—Descriptions of the geographic features of the State and their relations to the geology may be found in the following publications of the State Geological Survey:

The series of Geologic Folios, begun in 1908.

"Physical Geography of New Jersey," by Rollin D. Salisbury. Final Report of the State Geologist, vol. iv, 1898, 170 pp.

"Topography, Magnetism, Climate" and "Physical Description," by C. Clarkson Vermeule. Final Report of the State Geologist, vol. i, 1888, pp. 39-199.

[1] See page 141.

CHAPTER II.

ROCKS AND ROCK STRUCTURES.

For the benefit of the non-technical reader brief explanatory statements are here inserted concerning the more common types of rocks and their structures. For a fuller consideration of these topics, as well as those of the geologic forces and processes and the great field of historical geology, reference must be made to text books and the larger manuals.

Sedimentary Rocks.

ORIGIN.

Definitions.—The sedimentary rocks include all those varieties that have been formed in layers, beds or strata, by the accumulation of mud, sand and gravel—chiefly washed down from the land by rivers—and the limy oozes of the sea. Such an arrangement in beds or strata is called bedding or stratification, and rocks possessing this structure are said to be stratified. Similar sediments are now being deposited in seas and lakes and on low lands in many parts of the world.

Accumulations of soft mud or clay or of loose sand and gravel are classed as rocks, because they are composed of rock materials, but they are not included in the ordinary meaning of that word. The greater part of such materials, however, particularly the bulk of those that were formed in the earlier periods of geologic history, have become solidified into stone. This is due in part to pressure to which they have been subjected, but in greater part to the deposition between the particles of a small amount of mineral matter from solutions that have penetrated into the porous mass, cementing them more or less firmly together.

Marine sediments.—Most of the sedimentary formations of New Jersey contain sea shells or fragments of other marine animals, showing that they were formed in the sea, which at various times in the past has covered all parts of the State, although perhaps not all at any one time. Thus the sedimentary rocks (shale, limestone, sandstone, and conglomerate) that are so abundant in the northwestern counties, particularly in Sussex and Warren, and in parts of Hunterdon, Morris and Passaic, were deposited chiefly in a northward extension of the Gulf of Mexico, which in several periods of the Paleozoic era expanded into a great sea that cov-

ered much of the interior of the continent. On the other hand, the extensive deposits of sand, gravel, clay and marl that constitute the whole of the State south of a line through Trenton and New Brunswick (Pl. II)—about three-fifths of its entire area—were accumulated at a much later time and, with the exception of the Raritan clays and sands, chiefly in the borders of the Atlantic Ocean, which covered all of this Coastal Plain region and its southward continuation to the Gulf of Mexico.

Continental deposits.—In contrast with these areas of sedimentary rocks in the northwest and in the south, there is a middle belt of country extending across the State from the Delaware to the Hudson in which red shale and sandstone of Triassic age are prominent (Pls. I, II). These are older than the Coastal Plain formations, which overlap them on the south, but much more recent than the rocks of Sussex and Warren Counties. They contain scattered remnants of land plants in places, and many footprints of land animals. The mud of which they are in part composed was often dried and cracked by the sun as it accumulated, and these cracks were later filled with material of a different color or texture so that they are now recognizable. There are other characters also that show that the beds in this region were deposited on low lands by streams that washed down the mud and sand from higher grounds and spread them over wide areas at times of high water. Fossil fishes that are found here and there lived in the streams and small ponds or lakes.[1]

Glacial deposits.—Still another type of sedimentary deposit is represented in the surface materials that cover much of the country north of a curved line through Perth Amboy, Plainfield, Summit, Morristown, Dover, Hackettstown, and Belvidere (Fig. 5). These are the accumulations of sand, gravel, clay, and bowlders, mingled together in all proportions in the glacial till that forms a sheet over much of the surface, and in the hummocky hills and ridges of the terminal moraine (p. 161). All of this material was scoured from the soil and broken from the underlying bedrocks of this region and of the country north of it in very recent geologic time by the slow movement of a great continental glacier or ice sheet, thousands of feet thick, similar to the ice caps that now cover Greenland and the Antarctic continent. The waters that

[1] Geologists formerly supposed that local bays extended into this region from the Atlantic coast of that time; but since no distinctly marine fossil has been found, there is no evidence in support of this hypothesis. (See p. 106).

flowed constantly from the melting borders of the ice sheet and those produced by its final melting and disappearance carried with them more or less of the material transported by the glacier. The finest material was carried in suspension and was ultimately deposited as beds of clay and silt in areas of still water, as lakes, ponds, and the sea. Coarser materials were laid down, chiefly along the courses of the glacial streams, as beds of sand and gravel. The water-laid deposits form the stratified drift so commonly associated with the glacial till.

All of these glacial deposits are unconsolidated, although locally the till has been so compacted by pressure that it can be excavated only by blasting and in places the gravel has been cemented by carbonate of lime to a loose conglomerate. In New Jersey they range in thickness from a few inches to an extreme known depth of 460 feet, but the average thickness is probably not more than 15 or 20 feet. In general the drift is somewhat deeper in the valleys than on the adjacent slopes and uplands.

Unconsolidated deposits of the Coastal Plain.—Deep wells in the southern part of the State penetrate successive layers of sand, gravel, clay and greensand (glauconite) marl to depths in excess of 2,300 feet. In some localities a little of the sand and gravel near the surface has been consolidated by iron oxide into stone, but the total quantity of solid rock in this region is insignificant, and in the main the formations represented on the map of the Coastal Plain (south of the line through Trenton and New Brunswick) are unconsolidated beds.

THE SOLID ROCKS.

General statement.—North of the line through Trenton and New Brunswick the bed rock is everywhere solid. In most places it is covered with a mantle of unconsolidated material, which may be (a) the result of the decay of the underlying rock, or (b) drift deposited on the hard rock by wind, streams or glaciers. This mantle rock may vary in thickness from a few inches to many feet, but in the more hilly and mountainous regions the bare rock appears at the surface in numerous places.

As indicated by the colors and symbols on the map, many divisions or formations have been distinguished in this region. There are not so many different kinds of rock, however, as there are divisions; for in nearly all the formations various beds occur that are composed of the same kinds of rock as similar beds in other formations. Beds of sandstone or limestone, for example, are constitu-

Kittatinny Valley. Further northwest the compression was much less and the strata in northeastern Pennsylvania were merely uplifted and thrown into broad wave-like undulations, which become gentler and gradually die out westward. This great series of movements, involving compression, folding, faulting, and uplift, began in Pennsylvanian time but took place chiefly in the Permian period. It has been variously called the Appalachian revolution and the post-Pennsylvanian or post-Carboniferous deformation, and its completion marked the close of the Paleozoic era.[1]

[1] It is not everywhere possible to differentiate between the late Ordovician folding (Taconic) and that of the Permian. The greater distortion of the early Paleozoic formations southeast of the Highlands may be due in part to the earlier movements. No folds, however, which involve Silurian and younger rock can be ascribed to the Taconic disturbances.

CHAPTER VI.

MESOZOIC ERA.

General statement.—The Mesozoic era is divided into the Triassic, Jurassic, and Cretaceous periods, the latter being often divided into an earlier (Comanchean) and later (Cretaceous) period. Although of very long duration, it was only between one-half and one-third as long as the Paleozoic, or 135 to 175 million years, if recent estimates are to be accepted. Its life was characterized by the great development of reptiles. "They filled all the roles now taken by birds and mammals; they covered the land with gigantic, herbivorous and carnivorous forms; they swarmed in the sea; as literal dragons, they dominated the air." (Scott). During this era, the mammals and birds began to emerge from reptilian stock.

In New Jersey the Mesozoic is represented by formations referable to the late Triassic and the Upper Cretaceous periods. They extend across the State in a broad zone from northeast to southwest, and underlie the Piedmont Plain and inner portion of the Coastal Plain. Their original extent was of course much greater to the northwest and on the southeast they pass beneath younger formations.

Triassic Period (Newark Group).

General character.—The rocks of the Newark group are chiefly if not wholly of Triassic age. They extend from the Hudson southwest through New Jersey, Pennsylvania, Maryland into Virginia, and appear in detached areas in Nova Scotia, Massachusetts and Connecticut, Virginia, and North Carolina. The belt in which they occur is, therefore, over 1,000 miles long, but the existing areas of Triassic rock are now widely separated and may never have been directly connected through the whole length of the belt. The Trias comprises both sedimentary and igneous rocks, the former chiefly shale and sandstone with some conglomerate, the latter extrusive basalt and intrusive diabase.

In New Jersey they occupy the broad Piedmont belt southeast of the Highlands and extend diagonally across the north-central portion of the State (Pls. I, II) in a northeast-southwest zone, their southeastern margin being approximately a line drawn from Trenton to Bayonne.

SEDIMENTARY ROCK.

Structural relations.—The Trias rests unconformably upon the early Paleozoic and the pre-Cambrian crystalline rocks along the southeastern margin of the Highlands. The sedimentary members are composed in part at least of material furnished by the erosion of the Devonian and older Paleozoic formations which formerly covered the Highlands as well as of the crystallines themselves. Hence they are considerably younger than the youngest of their constituent materials. They are in part overlapped by beds of Cretaceous age, which rest upon their beveled edges. Hence a very considerable period of erosion separates them from the next overlying formation. The structure is chiefly monoclinal, the strata being inclined at low angles toward the northwest, but locally broad shallow folds have been developed. The beds are broken by many nearly vertical faults, the amount of dislocation varying from a few inches to several thousand feet.

The sedimentary rocks are sparingly fossiliferous, footprints of reptiles, a few species of fish, a small crustacean, and a few remains of land plants being the chief elements. The formation is generally considered to be of late Triassic age, and by some the upper parts are regarded as Jurassic; hence the name Jura-Trias, by which the Newark group as a whole is often called. On the basis of lithologic character the strata in New Jersey have been divided into three parts, as follows:

Stockton formation (Trs).—The Stockton beds at the base of the Newark group in New Jersey consist of light-colored arkosic sandstone and conglomerate with interbedded red sandstone and shale. The thickness is estimated at 2,300 to 3,100 feet. (See "Sandstone," p. 187). The material of which they are composed was derived chiefly from the disintegration of crystalline rocks and came from the southeast. Well-rounded quartz pebbles an inch or more in diameter are not uncommon at some horizons.

Lockatong formation (Trl).—The Lockatong beds overlie the Stockton and consist of black shale, hard, massive, dark argillite, flagstone, and, in a few places, very impure thin limestone layers. The formation has an estimated thickness of 3,500 feet. (See "Argillite," p. 187).

Brunswick formation (Trb.)—The Brunswick beds are chiefly soft red shale with some interbedded sandstone, which becomes more abundant and, on the whole, somewhat coarser, toward the northeast. Its thickness has been estimated at 6,000 to 8,000 feet, being equal to, if not greater, than the combined thickness of the other two divisions. Moreover, its wide areal extent, due to its thickness and repetition by faulting, makes it the most conspicuous of the Triassic formations and gives the impression that these rocks are all soft red shale, with only an occasional layer of purple, green, yellow or black shale—a conception which overlooks the Stockton and Lockatong formations. The uniform presence of finely disseminated mica in the Brunswick shale as in the Stockton formation indicates that the sediments were largely derived from the disintegration of the pre-Cambrian crystalline rocks and came from the southeast.

Border conglomerates (Trc).—Beds of conglomerate occur at a number of localities along the northwest border adjoining the Highlands and there replace the beds of the preceding divisions. Locally well-rounded boulders a foot or more in diameter occur in these beds, which represent the fan-like accumulations formed by heavily-loaded streams of high velocities, where they debouched upon a low plain. An excellent section through the flank of one of these deposits is exposed in the bluff along the Delaware River 2 miles above Milford.

These massive conglomerates which are believed to indicate the location of Trias streams which emerged from the northwest highlands onto the inter-mountain valley, are of three somewhat diverse types;—(a) those predominantly of well-rounded quartzite and hard sandstone pebbles and boulders, (b) those predominantly of limestone fragments, many of which are sharply angular, and (c) those containing a high percentage of granite and gneiss. There is some commingling of pebbles but on the whole the different types are sharply differentiated.

The calcareous conglomerate is most extensively developed northeast of Annandale and Lebanon, and north of Suffern, N. Y. The chief exposures of gneiss conglomerates are between Montville and Pompton Plains. There are extensive areas of the quartzite conglomerate, northwest of Milford, south of Pattenburg, near Peapack and on Mount Paul.

In addition to these large areas localized along the northwest border, there are numerous areas, particularly in Bergen and Passaic counties, where lenses of conglomerate and pebble-bearing sandstone occur inter-leaved with the finer beds of the Brunswick series. Granite and gneiss pebbles in these beds are conspicuous by their absence.

The comparative absence of granitic pebbles in these border conglomerates except north of Montville and the wide extent of the

before the deposition of the Newark sediment began on the lower land to the southeast. When deposition commenced, the whole area now occupied by the Newark beds, and at least the adjacent portions of the present Highlands had been worn down almost to a smooth plain, developed on the beveled edges of the folded and faulted Paleozoic strata, as well as the older pre-Cambrian rocks. Such a worn-down surface which approaches a plain in its topography is called a peneplain.

Further northwest the Permian Appalachians may have retained something of their mountain elevation, although beyond all question they were greatly reduced from their original height and may have approached a stage of planation.

Triassic deposition.—Sometime after the beginning of the Triassic period, however, a wide-spread earth movement affected the eastern region, perhaps a late manifestation of the same orogenic forces to which the mountain folds owed their origin. As a result the old lands of Acadia and Appalachia on the southeast and the new mountains on the northwest were broadly uplifted, while the belt between was relatively depressed even though it may have participated in the upward movement. A series of intermontane basins, perhaps not continuous, was thus formed which extended from Nova Scotia to North Carolina. The present Piedmont region of New Jersey formed the northern end of one of these basins which extended southwest across Pennsylvania and Maryland. In it the sediments washed from the higher region on the southeast began to accumulate. Some of the characteristics of the sediments, particularly their prevailing red color and the general absence of organic matter, seem to point to a dry climate in which occasional torrential rains brought down the debris from the higher lands and spread it in broad alluvial fans upon the adjacent plains.[1] At

[1] See Annual Report of the State Geologist for 1906, pp. 97-129. The evidence for this view is also well summarized by Schuchert in a discussion of the Newark strata of Connecticut, which are in every way comparable to those of New Jersey. He says: "None but animals and plants that inhabit the land are here seen, and when these are considered in connection with the exceedingly common sun-cracked layers of mud, less frequent raindrop impressions, local accumulations of semirounded bowlders, and the nearly constant lens-shaped bedding of the imperfectly assorted sands and conglomerates between the muddier layers of wider areal extent, the evidence is positive that the Newark series is fluviatil in nature and must be eliminated from marine deposits and Triassic seas." (Bulletin Geol. Soc. of American, vol. 20, 1910, p. 438; also compare pp. 578, 579).

It is to be noted further that favorable conditions for mud-cracking over wide areas are found only in playa basins and upon the subaerial portions of deltas, where all parts are alternately covered by water and by air for considerable periods of time. (Compare Joseph Barrell, American Jour. Science, Vol. xxxvi, 1913, p. 438).

many points along the northwestern border of these plains, where swift streams debouched from the adjoining Highlands, beds of coarse gravel composed chiefly of quartzite and limestone were deposited and formed wide-spread alluvial fans, but the bulk of the sediment seems to have come from Appalachia to the east. Reptiles, some of them of gigantic size, travelled across the soft mud flats, perhaps on their way to widely separated drinking pools, and left as a record of their progress many footprints, which in some places are perfectly preserved in the strata. Slabs measuring 1,700 square feet from a quarry near Towaco, Morris County, show the footprints of 12 different species, some represented by several prints, and are now preserved in the Museum of Rutgers University. The large number of tracks within so small an area indicates an assemblage of individuals such as might occur around a water hole in an arid country.

Under the steadily increasing load of sediments and the continued action of the forces that were warping the surface of the land, long northeast-southwest belts of the Piedmont region in New Jersey and neighboring states were gradually carried down by faulting and folding in narrow trough-like depressions. Concurrently with these movements of depression the incipient basins were being continually filled by the deposition of sediment, which thus attained great thickness along these narrow belts. Considerable material was supplied from the lands to the northwest, as shown by the quartzite conglomerates, but the gneisses and granites on that side were not then exposed to erosion except very locally, and the great bulk of the feldspathic and micaceous sandstones that make up so much of the Newark rocks must have come from higher lands that still existed to the southeast.

From time to time surface depressions were doubtless formed on the low plains of accumulation, sufficient to guide the courses of streams and to contain local shallow lakes and ponds. Some of these existed long enough to be populated with fish of various kinds, the fossil remains of which have been found in great numbers at a few localities, notably near Boonton. Here in excavations for the Jersey City reservoir large numbers were found at several horizons through a thickness of two or three feet. Their abundance at successive horizons point to the periodic drying up of a land-locked bay, with consequent death of the fish, and the restocking of the area when the rainy season restored the lake to its normal height. In the Piedmont of Virginia and North Carolina, Triassic swamps gave rise to accumulations of vegetation that

more probably lies beneath the parts of the sheets not yet exposed to view.

Post-Newark faulting and erosion.—The period of Newark sedimentation was at last brought to a close by the formation of and movement along a series of northeast-southwest fractures which divided the earth's crust into a succession of long and narrow blocks. These were tilted to the northwest, thus producing the faulted monoclinal structure with low northwest dips[1] which now characterizes these beds.

The monocline gives place to shallow local folds in some portions of the region, especially in the Passaic Valley west of the Watchung Mountains, where a gentle downward warping has formed a broad, shallow, platter-shaped syncline, the crescent-shaped outcrops of the great basalt flows which form the Watchung Mountains being due to this cause. Further south near the western margin of the group the shape of the smaller trap sheets near New Germantown and Sand Brook is due to local undulations (See sections AA, BB and CC at the bottom of the large geologic map).

The movement which took place along the fracture planes because of the tilting of the blocks is in many instances to be measured in hundreds and in some instances in thousands of feet, but it is not to be supposed that this was the result of a single catastrophic movement. On the contrary it was prolonged through a period inconceivably long from the human standpoint, although geologically brief, and during its progress the uplifted edge of each tilting block was being eroded.

The two most important of these faults trend in a northeast-southwest direction, nearly parallel to the strike of the strata, through Hopewell and Flemington respectively. Since the tilting was to the northwest, the downthrow is on the southeast side in all except a few of the minor dislocations. The greater part of the northwestern boundary of the Newark area, along the border of the Highlands, is also formed by a series of northeast-southwest faults, with a strong downthrow on the southeast. Some of these faults appear in section CC at the bottom of the State geologic map, and their effects in displacing the strata and in some places producing a repetition of the surface outcrops of the formations are among the most pronounced characteristics of the section.

The fracturing and faulting were not restricted to the present area of the Newark formations in New Jersey and adjacent states,

[1] In Connecticut the dip is eastward.

but affected also the adjoining regions to the northwest where the Appalachian folds and overthrust faults of the post-Pennsylvanian deformation are cut by normal faults that are probably referable to the close of this period. The old land of Appalachia on the southeast may also have been involved, for either at this time or during the long period of erosion which followed in the Jurassic period, there occurred its depression and final disappearance, and the near approach of the Atlantic Ocean to its present shoreline.

The duration of Triassic time has been estimated by Barrell at 35 to 45 million years.

Jurassic Period.

General statement.—Some geologists have regarded the upper part of the Newark group as of Jurassic age, whence the name Jura-Trias, which has often been applied to it. Apart from these beds, however, no rocks of Jurassic age are found in New Jersey, and in this account of the geologic history, the Newark group is regarded as wholly Triassic.

On the assumption that Jurassic rocks are absent in New Jersey and adjacent regions, the events of this period must be inferred from other data than the sedimentary record which has been the guide heretofore. Some conclusions, however, can be drawn from a careful study of the present topographic forms, which, except in very minor features, are the result of long-continued, subaerial erosion, particularly if these forms be compared with those which must have at first resulted from the tilted, faulted structure of the rocks themselves. If the changes to be described appear enormously great, and the agents producing them seem inadequate because of their slowness, there is the more reason for recognizing the enormous length of geologic time and for accepting an estimate of 35 to 45 million years for the Jurassic period.

Early Jurassic block mountains.—The tilting and faulting which closed the Trias period gave rise to a series of mountain ridges, each formed of a tilted crustal block with steep escarpment along the fault which marked its eastward face, and a gentle back slope the steepness of which was determined by the degree of tilting of that block. If the rate of faulting was extremely rapid as compared to the rate of denudation, some ridges must have attained a height measured by thousands of feet, since the movement on some of the fault planes was of that order of magnitude. Rapid uplift would also result in even crest lines, straight cliff faces, and

wide belt northwest of a line from Long Branch through Freehold, Clarksburg, Mullica Hill, Woodstown and Alloway. The region of the Clarksburg Hills and Mount Pleasant Hills was dissected to depths 160 to 200 feet below the present summits, but we do not know how much higher the summits were then than now. Adjacent to the Delaware there was formed a broad lowland tract, the surface of which is now from 110 to 135 feet above the sea in the Camden region. On the southeast this lowland was bordered by land some 50 feet higher. Northeastward it was probably continuous with a lowland that extended, then as now, along the inner margin of the Cretaceous strata to Raritan River. During this period the streams flowing directly to the ocean, like Maurice River, Mullica River and others, were likewise developing valley plains along their courses.

Quaternary Period

Introductory statement.—The Quaternary formations of New Jersey consist of: (1) Pleistocene deposits of both glacial and non-glacial origin—the former occurring in the northern counties, the latter chiefly on the Coastal Plain; (2) recent alluvium along many streams, beach deposits and swamp accumulations. Compared to previous periods the Quaternary has been very short, the maximum estimate of its length being 1,000,000 to 1,500,000 years. Of this all but a very small part must be assigned to the Pleistocene epoch and a few thousand years only to the postglacial or Recent epoch.

The Pleistocene

Subdivisions—In North America as in Europe, during the Pleistocene ice sheets covered thousands of square miles to a thickness of many hundreds or even thousands of feet. These glacial stages alternated with warmer interglacial stages during which the ice sheets melted far back from their southern limits or even disappeared entirely. There is evidence to show that these interglacial times were not only warmer than the glacial stages which preceded and followed, but that in some cases at least the climate was warmer than the present.

In the Mississippi Valley the following glacial and interglacial stages have been recognized, beginning with the most recent:—

Wisconsin glacial stage (including the Iowan).
Sangamon interglacial.
Illinoian glacial.
Yarmouth interglacial.
Kansan glacial.
Aftonian interglacial.
Nebraskan glacial.

Changes of sea level.—Of recent years several writers[1] have emphasized that during the glacial stages large amounts of water were abstracted from the ocean basins and locked up on the continents in the form of ice. Antevs has calculated that during the Wisconsin stage this amounted to a layer over the ocean basins 805 feet thick if maximum glaciation occurred simultaneously in the northern and southern hemispheres; and that in the earlier glacial stages it was possibly about the same. Hence he argues that the glacial stages were times of relative emergence of the continents and retreat of the shore lines. For New Jersey during the Wisconsin stage he holds that the shore line stood 80 miles east of its present position.

With the melting of the ice sheets, the water was returned to the ocean basins, and the shore line readvanced across the continent. The interglacial stages then were times of construction of marine terraces along the coast and aggrading of valleys due to the drowning of their lower courses.

Whatever weight we may give to this interpretation of events and changes of sea level during the Pleistocene, there are other factors of which we must take notice. During the Wisconsin glacial stage a series of marginal lakes accumulated in northward-draining valleys in front of the ice sheet, the former margins of which are now marked by a succession of shore lines indicating the levels at which the water surface stood at different times. Horizontal when formed (except for a slight slant of the water surfaces due to gravitational attraction of the ice sheets), these shore lines now rise at varying rates to the north and northeast, proof positive that since the maximum advance of the ice there has been a differential uplift of the continent—at least in the area marginal to and beneath the ice. Similar phenomena are found along the coast of New England and the Gulf of St. Lawrence. Because the land has risen since the melting of the Wisconsin ice, and this upward movement has been greatest where the ice was thickest, it is a fair assumption that this movement has been in the nature of an elastic recoil or isostatic readjustment in late glacial and postglacial time from the compression due to the weight of the ice.

[1] Daly, Antevs and others.

sauken) time has commonly been called the Somerville peneplain. It represents a lower level of denudation than the earlier Harrisburg peneplain. Most of the erosion separating the two was accomplished in late Tertiary time, and the surface at the close of the Pliocene may have approximated very closely the level on which the later Pensauken formation was deposited. Nevertheless, the final stages in the development of this well-marked plain are referable to the erosion that followed the deposition of the Bridgeton gravel in early Quaternary time.

Pensauken deposition (Qps).—After the post-Bridgeton stage of erosion, described above, there was a period characterized preeminently by deposition in the central and southern portions of the State. This was probably occasioned by a slight submergence, which resulted in drowning the rivers in their lower courses. As a consequence, they ceased to erode and began to fill their valleys. Deposition took place also in the bays that occupied the drowned portions of the valleys and along the submerged seaward margin of the State. It is not now possible to determine accurately which of the deposits of this age are fluviatile and which estuarine or marine in origin, but it is probable that all three classes were made in the State at this time. The resultant formation has been called the Pensauken.

During maximum submergence, as in Bridgeton time, it is probable that a sound extended across New Jersey from Raritan Bay to the Delaware at Trenton, and that south of it there were islands, large and small. Since, however, the Pensauken gravel does not occur at such elevations as the Bridgeton it is inferred that the Pensauken submergence was not so great as the Bridgeton, and at its maximum the sea may have covered only those portions of the State that are now less than 130 feet or thereabouts in elevation. Indeed, it is by no means demonstrated that it reached this elevation, although there are many facts that point to this conclusion. The sand and smaller pebbles are chiefly quartz, but pebbles and cobbles of shale, sandstone, quartzite and crystalline rocks from the Triassic, Paleozoic, and pre-Cambrian formations are widely distributed. In addition there are chert, water-worn ironstone pebbles and varying amounts of glauconite which with much of the quartz came from the erosion of the older Constal Plain beds. There is considerable local variation in size and kind of materials, as is to be expected. The deposit is commonly arkosic where northerly derived material is present, and glauconitic where the bulk of the material came from the Constal Plain.

The original maximum thickness may have been as much as 150 feet along the axis of the broad depression in which it was mainly deposited, but toward the margins it was much less. The average thickness of the formation, as it now exists, varies in different localities from 10 to 20 feet in some regions to 40 or 60 feet in others.

In general the Pensauken much resembles the Bridgeton and frequently cannot be distinguished from it on lithologic grounds. In other localities there are significant differences in composition. Where both are present, however, it invariably occurs at lower levels, and has suffered less erosion. Its deposition obliterated the smaller and partially filled the larger valleys eroded in post-Bridgeton time, forming broad flood-plain deposits along the drainage lines, thus smoothing over all but the greater inequalities of surface on the lower parts of the Somerville peneplain. The coastal portion of the State was more or less submerged during this period of deposition, but the Pensauken formation is probably due primarily to stream deposition rather than to marine or shore conditions.

Glacial Formations.

Types.—Under this head are included not only the material deposited directly by the ice sheet, but also the material deposited by the melt water from the ice. Some of this was deposited in immediate proximity to the ice, and some along the course of streams many miles south of the ice margin, but nevertheless composed principally of material which had been transported by the glaciers. Material deposited directly by the ice is in general a tough, stony clay, unassorted, heterogeneous in size and kind. That deposited by the glacial waters is waterworn, more or less assorted in size and deposited in layers. The former is called *till*; the latter is usually gravel, sand, silt or clay.

In New Jersey the glacial deposits are now believed to belong to three widely separated epochs, or stages, Jerseyan (oldest), Illinoian, and Wisconsin (youngest). These glacial stages are believed to have been separated by warmer periods during which the ice retreated far beyond the boundaries of the State.

Jerseyan glacial stage.—In 1892 Salisbury announced the identification in New Jersey of a very ancient sheet of glacial drift, ly-

[1] R. D. Salisbury and G. N. Knapp. The Quaternary Formations of Southern New Jersey, Geol. Surv. of N. J., Vol. VIII, Final Report Series, (1917) p. 65.

the older gravel, but which would naturally have been ground up in the reworking of the material in Cape May time. The material of the terraces in the valleys is unlike that of the coast in being much more mixed, much less well assorted, and much less clean. It covers broad areas in the larger valleys, and narrower areas in the smaller ones."

Age.—Until recently the Cape May has been believed to correspond in age with the valley trains of the Wisconsin ice sheet. The estuarine terraces along Delaware Bay seemed to be continuous with those along Delaware River and these, in turn, to head in the terminal moraine of the Wisconsin ice sheet. In the vicinity of Trenton there is no sharp line between the stratified glacial drift (Qsd) of the Delaware above the city and the Cape May formation (Qcm) below.

In recent years, however, cogent reasons have been adduced by several students of these problems which cast doubt on this correlation in spite of the strong evidence in its favor. Antevs (loc. cit.) has pointed out that the Wisconsin ice age was a period of low sea level, (305 feet less than now) and of withdrawal of the coast line 80 miles east of its present position. Hence that it would have been impossible for marine terraces of glacial age to have formed in their present positions along the New Jersey coast line. Also much information has accumulated regarding fossils in the Cape Map, and Richards[1] has recently described a large mild-water fauna of 104 species from the Cape May formation: "The fossils from the deeper excavations suggest a warmer climate than that existing today; those in the upper (younger) part indicate a climate similar to that of today. This is consistent with the view that the Cape May formation was laid down during an interglacial stage, and the presence of the colder-water fossils in the upper part may indicate that the climate was becoming colder, due to approaching glaciation" (MacClintock and Richards loc. cit. p. 307).

It seems necessary, therefore, to regard the greater part of what has heretofore been classed as Cape May, not as a glacial and postglacial deposit contemporaneous with the maximum advance and withdrawal of the Wisconsin ice sheet but as belonging to the warmer pre-Wisconsin interglacial stage.

Sand and gravel terraces along the Delaware River head in the terminal moraine of the Wisconsin glacial stage and can be traced

[1] H. G. Richards. Marine fossils from New Jersey indicating a mild interglacial stage. Am. Phil. Soc. Pr., Vol. 72 (1933), p. 205.

without serious interruption to Trenton, and farther south. Moreover, below Trenton these glacial terraces apparently merge with those which are continuous with the marine terraces along Delaware Bay. The glacially derived material is progressively less below Trenton, but it has been found at intervals as far south as Penns Grove, although the greater bulk of the material of the terraces is gravel and sand characteristic of the Coastal Plain streams, which had no glacial connections and no access to northerly derived material.

These facts have led MacClintock and Richards[1] to assume that after deposition in pre-Wisconsin interglacial time, the Cape May formation was partially removed from the Delaware Valley below Trenton before the Wisconsin ice sheet reached its maximum advance. The river was bordered by terraces of typical Cape May gravel, which were more or less cut into by the floods arising from the melting ice. Coastal plain material was thus added to that brought down by the Delaware and the intermingling of material which we now find resulted. According to this hypothesis the terraces now bordering the Delaware below Trenton are composed of Cape May material (interglacial) more or less reworked and redeposited in late Wisconsin time, plus a diminishing amount of glacial material derived from the Wisconsin ice sheet. Post-Wisconsin erosion has removed a large part of the glacial and preglacial filling and developed the present terraces.

For further discussion of post-Cape May erosion see below (p. 169).

WISCONSIN GLACIAL STAGE.

The Wisconsin drift.—After the earlier glacial and the Cape May interglacial epochs, conditions changed and an ice sheet again overspread Canada, and a part of the United States, including northern New Jersey. The fact and extent of this invasion are proved by the thick mantle of glacial debris which now covers the northern counties. These deposits have been called the Wisconsin drift, from their great development in Wisconsin where they were studied many years ago.

The southern extension of the ice during this stage is marked by a great terminal moraine (Qtm) which crosses the State (Fig. 5) in a curved line through Perth Amboy, Plainfield, Summit, Morristown, Dover, Hackettstown, and Belvidere. South of the moraine narrow valley trains of glacial gravels characterize some

[1] Paul MacClintock and Horace G. Richard. loc. cit. p. 308.

of the southward drainage lines, notably Delaware Valley, and locally overwash plains (Qsd) are conspicuous topographic features (Plainfield and vicinity). North of the moraine the rock surface is covered very generally by the usual assemblage of drift deposits, stratified and unstratified.

The unstratified drift or till consists of a clay-like rock flour (glacial clay) with which are mingled in variable proportions sand, gravel, rock fragments, and boulders, some of which have a diameter of several feet. Most of the recognizable fragments are like the underlying bed rock or that of the areas lying immediately to the northward. Only a small percentage of the material has been transported many miles. Except in the moraine belt the sheet of till has *not* been represented on the geologic map, but it must be understood as covering the surface north of the moraine in practically all areas not covered by the stratified drift. Locally, however, the underlying rock outcrops in relatively small exposures.

The stratified drift (Qsd) comprises beds of clay, sand and gravel that in the process of deposition were assorted and laid down by water flowing from the ice sheet, as well as those portions of the till that were eroded and redeposited by the glacial waters. This class of deposits marks the lines of glacial drainage and temporary lakes and swamps and occurs chiefly in the valleys. Its distribution is shown on the map. (See "Clays," p. 181). The sequence of events leading up to the formation of these deposits and the withdrawal of this ice sheet will now be sketched.

Incursion of the ice sheet.—During the Wisconsin stage of the glacial epoch the ice sheet advanced only to the line of the terminal moraine (Fig. 5), or locally and for brief intervals a mile or two beyond it. That its southern margin maintained a constant position for a considerable lapse of time is proved by the moraine itself. Antevs estimates this to be about 2000 years.[1]

In its advance it completely buried or carried away whatever of the older drift sheets remained in the region covered by it, for nowhere north of the moraine has the Jerseyan or Illinoian drift been recognized in New Jersey beneath the Wisconsin drift. During its occupancy of the region the mantle of disintegrated rock was removed from wide areas and the firm rock beneath was somewhat eroded. Less commonly the disintegrated material was

[1] Ernest Antevs—The Last Glaciation—Amer. Geog. Soc. Research Series No. 17, p. 107.

not completely removed, and on the whole, the amount of erosion due to the ice was not great.

If it be assumed that all the Wisconsin drift of the State is the result of erosion of the rock beneath, or putting it a little differently, if it be assumed that none of it was derived from regions north of New Jersey, the average erosion over the whole surface affected would probably not exceed 25 feet. Some of the drift did come from regions to the north but this was in part counterbalanced by the fine rock flour carried away by streams from the melting ice and deposited beyond the borders of the State. It is probable that the actual amount of erosion was somewhat less than 25 feet. Comparison of the general character of the topography in the areas north and south of the moraine leads also to the conclusion that in this region the ice sheet did not greatly erode the surface over which it passed. Although the average erosion was small, that along certain lines, particularly in the valleys, probably was in excess of the average.

Direction of ice movement.—In general the ice sheet moved across northern New Jersey in a direction a little west of south (Fig. 5). The lowland belts, like Kittatinny Valley and the Triassic area, were occupied by great lobes of ice from the axis of which it diverged to the right and left. The effect of this along the margins of the great valleys was to carry the ice from the lowland onto the adjoining highland. This divergence was so marked along the eastern side of the lobes that the direction of movement in places was strongly to the southeast. Since the lowland belts afforded less obstruction to its onward movement the ice advanced further south along them than where the elevation was greater, and as shown by the moraine its margin was strongly lobate at its maximum extension. Thus the terminal moraine is 25 miles further south at Perth Amboy than across the Highlands from Dover to Hackettstown.

Glacial lakes.—Temporary lakes were formed during the Glacial epoch in several valleys which drained northward and whose lower courses were therefore blocked by the ice. In some places continued advance of the ice sheet filled the valleys and obliterated the lakes, but with the retreat of the ice these lakes came into temporary existence again unless their valleys were left completely filled by drift. Temporary lakes of this character are believed to have existed in the Wallkill Valley, the Black River Valley near Succasunna, and the Pequest Valley above Great Meadows (Danville). In the latter case the lake was formed behind the moraine.

after the ice had withdrawn a short distance from the region, but it was finally drained by the cutting down of its outlet across the moraine above Townsbury. At the highest stage its level was approximately the present elevation of 550 feet.

The largest glacial lake in New Jersey, however, and the one whose history has been most carefully worked out was Lake

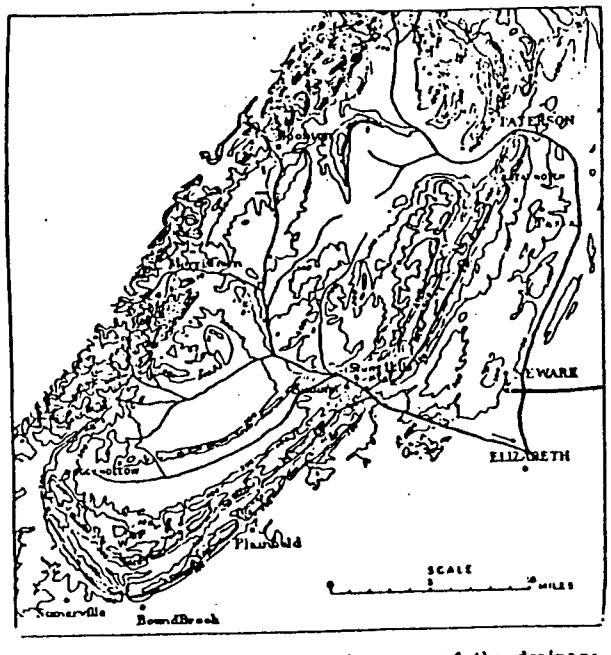


Fig. 11. Diagram showing the supposed course of the drainage in the Passaic basin previous to the last glacial invasion.

Passaic, which occupied the upper Passaic Valley between the Highlands on the northwest and Second Watchung Mountain on the south and east.

The present drainage of the lowland west of Second Watchung Mountain now escapes in a roundabout way through gaps at Little Falls and Paterson, but in preglacial and probably also in interglacial time, there were gaps, now filled with drift, in First and Second Watchung Mountains at Millburn and Short Hills, deep enough to drain the southern half of the basin, and formerly occupied by the master stream of the region (Fig. 11). If the drift

filling in these gaps is all of Wisconsin age, as seems probable, Lake Passaic did not come into existence until the ice advanced to the line of the moraine between Short Hills and Morristown (Fig. 12) and filled the Short Hills gap. Once formed in the southern portion of the basin the level of the lake rose until it overflowed at the lowest point of the rim, which is Moggy Hollow,

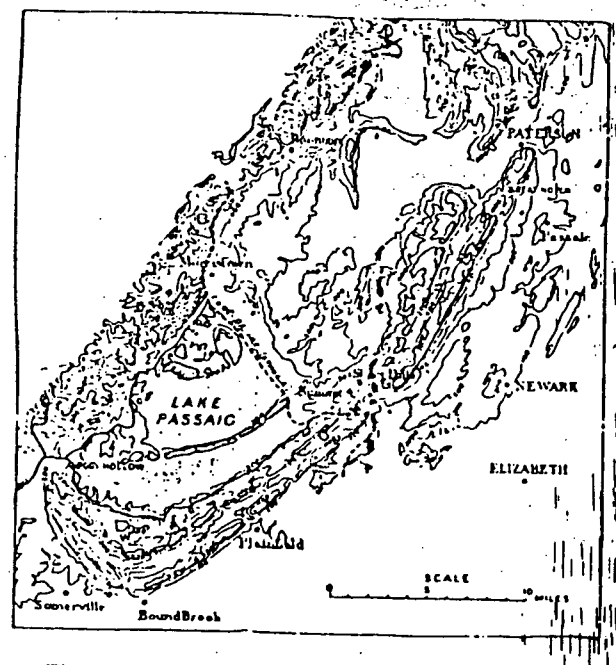


Fig. 12. Stage of maximum advance of the glacier. The edge of the ice was at the position of the terminal moraine and the glacier filled the Short Hills gap. The outer basin of Lake Passaic was occupied by a lake with its outlet to the west at Moggy Hollow.

7 miles north of Somerville and 2 miles east of Bedminster, where there is a current-swept pass across Second Mountain, the bottom of which is 331 feet above sea level. At its maximum height the lake level was not more than 25 feet above the bottom of the outlet. The waters escaped through this channel to the North Branch of the Raritan and thence to the sea. As the ice melted back from the moraine the Moggy Hollow pass remained the outlet, since the former gap at Short Hills was closed with drift.

The lake, therefore, increased in area and maintained essentially the same level as the ice withdrew (Figs. 13, 14).

At the time of its greatest extent, Lake Passaic was about 30 miles long, 8 to 10 miles wide and had a maximum depth of 240 feet. Over wide areas it was 160 to 200 feet deep.

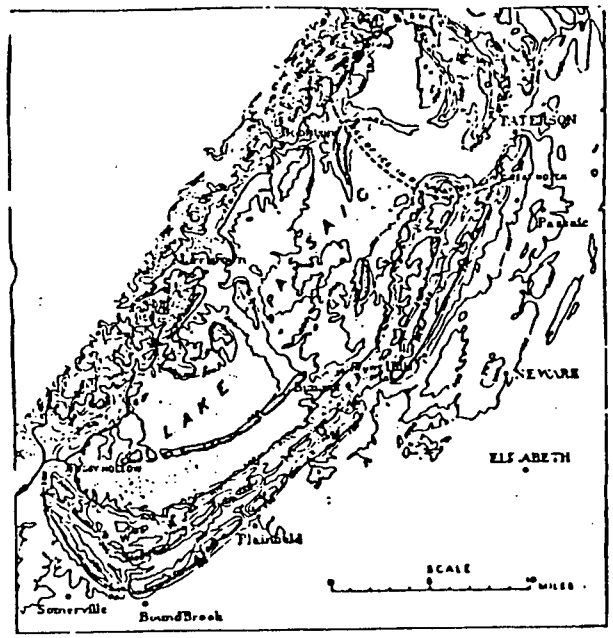


Fig. 13. Expanded stage of Lake Passaic.
The retreat of the ice had left the Short Hills gap filled with drift.

Faint wave-cut terraces and cliffs, small wave-built spits, bars, and terraces of water-worn gravel, and large conspicuous glacial deltas locate the former shore line and demonstrate the existence of this lake. The more conspicuous of these are shown upon the geological map.

When the ice front had finally retreated far enough to lay bare the outlet at Little Falls the lake basin north of the moraine was drained (Fig. 15) to the level of the outlet, about the present elevation of 185 feet, and the existence of Lake Passaic as a glacial lake was terminated. But preceding the final draining of the lake

there seems to have been a stage when the level was 65 to 75 feet lower than the maximum, after which the water rose again to approximately its former height. It is probable that these changes of level were connected with oscillations of the edge of the ice, which alternately opened and closed some outlet—possibly one at

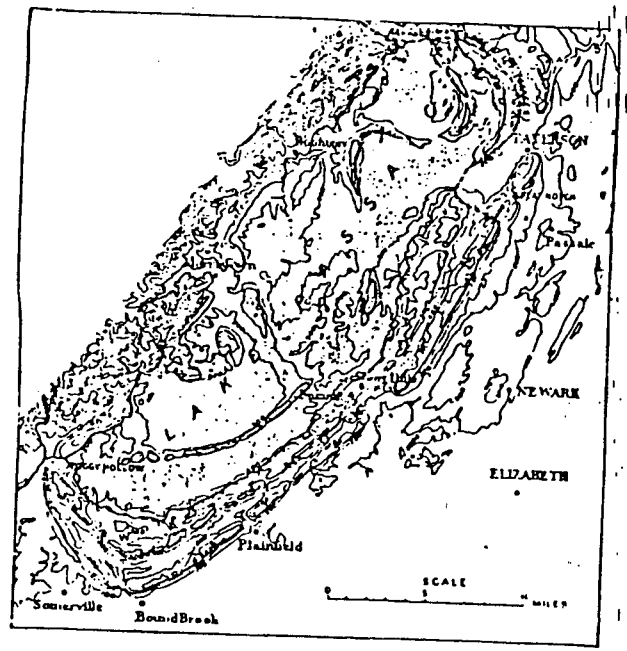


Fig. 14. Maximum stage of Lake Passaic.
All outlets except that at Moggy Hollow were either blocked by ice or filled with drift.

Great Notch or a subglacial channel along the course of the present Passaic.

After the portion of the lake basin north of the moraine was in large part drained by opening the Little Falls outlet, shallow lakes still existed in its lowest parts (Fig. 15). South of the moraine there was a long narrow lake between Long Hill and Second Watchung Mountain at an elevation of about 230 feet and having its outlet across the moraine west of Summit. This lasted until its outlet across the drift dam was lowered essentially to its present level. North of Long Hill a lake existed for a longer time

in the area of Great Swamp, since it is probable that some part, if not all, of the narrow gorge of the Passaic at Millington is of postglacial origin.

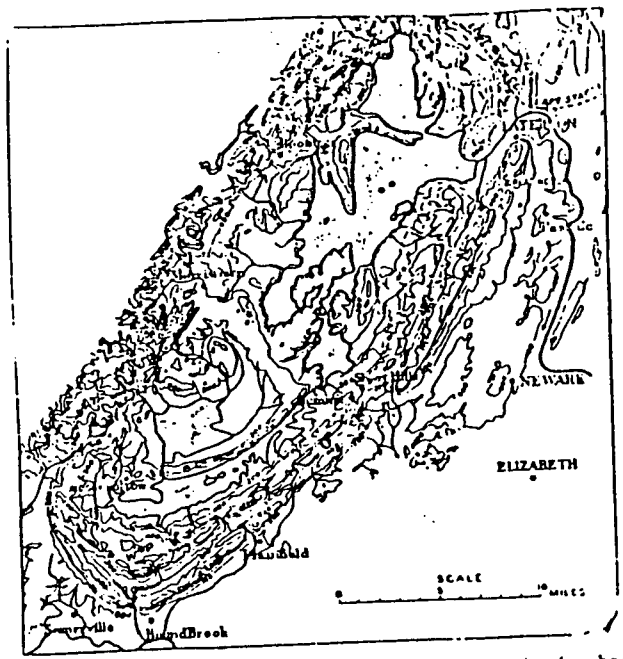


Fig. 15. Late stage of the lake, when the retreat of the ice had freed the Little Falls-Paterson outlet.
Shallow bodies of water still occupied the lower portions of the basin.

Withdrawal of the ice sheet.—Some of the events attending the withdrawal of the ice sheet have been mentioned in connection with the draining of Lake Passaic. As the ice front receded a comparatively thin sheet of till (not represented on the geologic map) was spread over the region north of the terminal moraine. Glacial drainage was concentrated in the southward draining valleys, some of which were much obstructed by stagnant and semi-detached masses of ice around and between which and the valley sides, kames and kame terraces were formed. Where the drainage was unimpeded the valleys were also aggraded, since the streams were heavily overloaded with rock debris from the glacier. Such a valley filling, commonly called a "valley train," extended

down many valleys far beyond the maximum limits of the ice advance. That of the Delaware, formed at the period of maximum ice advance, extends from the moraine near Belvidere to Trenton, where it merges into estuarine deposits of somewhat different origin. (p. 160).

The withdrawal of the ice was not at a uniform rate but was accompanied by pauses in its retreat during which recessional moraines of more or less pronounced character were formed. The ice front made an extended pause between Newton and Branchville, in Sussex County, as shown by the recessional moraine which, with some interruptions, can be traced from Ogdensburg through Lafayette, Halsey and Balesville to Culvers Lake. Moraine deposits north of Dingmans Ferry and Layton probably represent the position of the ice front at this time in the upper Delaware and Flat brook valleys. The dense forest growth and paucity of roads obscure its position on the back slope of Kittatinny Mountain. East of the Highlands there was a notable halt along a line connecting Waverly, Connecticut Farms and Springfield; another near Woodside, Riverside, Bloomfield and Montclair. Neither of these pauses can be connected with any degree of certainty with those of Sussex County.

From a detailed study of the laminated clay deposits near Mountain View, Little Ferry and Hackensack, Antevs (loc. cit. p. 109) concluded that 2500 to 3000 years were consumed in the retreat of the ice sheet from the terminal moraine to Haverstraw, New York. This includes the time necessary to construct the recessional moraines mentioned above. The total for building the Wisconsin moraine and the retreat of the ice sheet to latitude 49°N. in Canada is estimated by Antevs at 28,000 to 29,000 years. If the period of ice advance was of equal duration about 56,000 years must be allowed for this portion of the Wisconsin glacial epoch.

Post-Cape May emergence.—Explicit evidence of emergence of the Coastal Plain since Cape May time is furnished by the fact that the marine terraces of this age now stand 20 to 40 feet above present sea level. But this figure is not a measure of the change of level which actually occurred, because it does not take account of later changes of level, particularly of subsidence since. There is evidence that the Cape May deposits have been eroded far below present sea level, which could only have been accomplished if the region south of Sandy Hook had stood higher than now. Borings across Raritan Bay north of Conaskonck Point near Keyport show that a channel was cut in the Cape May and underlying earlier

ATTACHMENT E

STATE OF NEW JERSEY

Department of Conservation and Economic Development
Joseph T. Barber, Acting Commissioner

Division of Resource Development
Kenneth H. Creveling, Director

GEOLOGIC, HYDROLOGIC, AND WELL DRILLING CHARACTERISTICS OF THE ROCKS OF NORTHERN AND CENTRAL NEW JERSEY

by

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E-

Introduction

A glance at a geologic map of New Jersey shows that the northern part of the State is separated into northeast-southwest trending bands. Each of these bands is composed of a major rock type or group of rocks of approximately the same age.

The low plain extending from the Delaware River, north of Trenton, to the Hudson River, the corridor in which 65 to 75% of the State's population live, is underlain by sandstone, shale and traprock of Triassic age. (The geologic column describes the different formations and gives their ages). Immediately northwest of the Triassic plain are the high hills of the Precambrian crystalline rocks. Within this Precambrian band are several valleys underlain by limestone and shale of younger Paleozoic age. Next, to the northwest, is the main body of limestone and shale of lower Paleozoic age, which forms a wide valley known as the Kittatinny Valley. The last band, along the Delaware River north of the Delaware Water Gap, is composed of sandstone, shale and limestone of Silurian and Devonian age. These rocks occupy only a small part of the State in a region which is sparsely populated, and this report will not be concerned with them.

Descriptions of the rocks are given in ascending age, from the oldest to youngest rocks. Following a description of each unit, the hydrologic and drilling characteristics of the unit will be briefly discussed. A separate section is devoted to some of the aspects of water quality and pollution problems.

Precambrian Age Rocks

Included in rocks of this age are a wide assortment of rock types, consisting primarily of various gneisses, schists, and different types of granite. Many of these rocks were originally of sedimentary origin, but through intense heat and pressure, have been transformed into gneiss. Also, there are many igneous rocks present, mostly different types of granite.

The rocks of the Precambrian were formed well before the development of any life. They were intensely deformed and thoroughly recrystallized during the Precambrian.

The various kinds of Precambrian rocks, particularly granite and gnei are quarried for several uses. In the past, these rocks were used as buil stone, but now are used exclusively for crushed stone in the construction industry.

The different types of rock have different water bearing and water quality characteristics. The water bearing properties depend on cracks and fissures through which the water can flow. These tend to be more open near the surface and become progressively tighter and less abundant

The upper unit, known as the Ramseyburg Member, has an alternating sequence of claystone slate and silty to sandy beds. These sandy beds are light to medium grey and weather to a yellowish brown color. They range from one inch to more than 4 feet thick and tend to be lenticular. The silty to sandy beds make up 20 to 30 percent of the upper unit.

Shale and slate beds have no primary porosity, and the very fine silty beds have very low porosity. The Martinsburg is a poor aquifer, although near major structures, or in thick sand beds, fairly large wells may be developed. Near Clinton, several wells in leached Martinsburg limestone give yields in excess of 300 gpm. Most of the better producing wells are rather shallow, less than about 200 feet, because below this depth the rock has not been weathered and any fractures tend to be closed. There is normally sufficient water available for a domestic well, though there have been many instances of "dusters".

In drilling characteristics, the Martinsburg is medium-hard, but generally uniform in any one area. When the beds are standing on end, cable tool drilling is more difficult than with a rotary bit because the shale tends to shatter sideways rather than down.

Where the rock has been strongly faulted and broken, it can contain seams or vugs of white "bull quartz" which are rough on both rotary and cable tool bits. However, these are the zones in which more water can be expected because of the openings in the rock and the vugs in the quartz which permits the passage of water.

When a well is only in black shale with no sandstone beds, it is probable that it will have a small yield. It is not rare for Martinsburg wells to be over 500 feet deep and give less than 2 gallons per minute. In some parts of the formation, the shale is very black, cuts to a black powder and the powder will mark paper. This type of rock often contains an abundance of pyrite and the water may have a "rotten egg" odor and be somewhat hard.

Triassic Rocks

The Triassic Period started about 225 million years ago and lasted for about 45 million years. During this time there were a series of long narrow basins from Nova Scotia to North Carolina. The largest of these basins crosses New Jersey in a northeast-southwest direction. The mountains surrounding this basin supplied the mud, sand and boulders, that were carried by the rivers into the basins. Shallow lakes formed in the center of the basin. During this time large fern-like plants covered the land, and dinosaurs roamed the mud flats. Fossil leaves and fossil footprints are all that remain of this life. Along the border of the basin, streams deposited large cobbles in fan-shaped deposits. These formed beds of conglomerate which are local in extent. The types of cobbles depend on the kind of rock that was being supplied by the stream.

Three formations were deposited in the basin, the Stockton sandstone, Lockatong argillite and Brunswick shale. The Stockton is a good aquifer, the Lockatong a poor aquifer and the Brunswick a fair to good aquifer. The border conglomerates generally make a poor aquifer.

In areas underlain by shale or argillite, the ground water level is very susceptible to periods of drought. During a short dry spell the water table can drop appreciably, and in an extended dry spell, the lowering of the water table becomes critical and many wells go dry. On the other hand, the water table rises rapidly after a rain, and will recover rapidly from a dry spell. This indicates a limited amount of water storage in the rock, and the lack of overburden over shale or argillite.

Stockton Sandstone

The Stockton contains light colored, arkosic sandstone, yellow feldspathic sandstone, conglomeratic quartzite, brownish red sandstone and soft red shale. The pebbly beds are common at the bottom of the formation, and the shale becomes more abundant toward the top. The Stockton is about 3,000 feet thick, but thins to the northeast away from the Delaware River.

The sandstone has been used to construct many buildings in the Trenton-Princeton area, and in several other parts of the State. The field trip examines the Stockton in a quarry that is one of the few remaining quarries in New Jersey still producing building stone.

Most of the sandstone beds contain primary or intergranular openings which permit circulation of water. The best wells in the Stockton are from the middle of the formation where the rock is weakly cemented and well sorted. Well sorted sands, composed of grains of about the same size, have a higher porosity than poorly sorted sands. The lower pebbly beds in the formation are usually better cemented and poorly sorted. The upper part of the Stockton is composed, for the most part, of shale which has little primary porosity, and water availability from this part of the formation is controlled by joints and fractures. The water is generally of good quality, but locally it can be quite hard.

Lockatong Argillite

The Lockatong argillite is made up of sediments which accumulated on the bed of an ancient lake. These sediments were extremely fine muds deposited in water that at times became very saline. The center of this ancient lake was thickest near the Delaware River, where the formation is about 3,800 feet thick. The rock thins to the northeast and is no longer present north of New Brunswick. Because the argillite is so hard, it is very resistant to erosion, and is a prominent ridge maker. Much of the Hunterdon Plateau and Sourland Mountain are underlain by argillite.

Many buildings in the Trenton-Princeton area, especially Princeton University, are made of this rock. The variety of colors lends a pleasing tone which enhances the attractiveness of a building that is constructed of argillite.

The color of the argillite is usually dark grey, but ranges from black dark grey to mottled green, and from dark red to dull brownish-red. It is

recognized by the ringing sound it makes when struck with a hammer, it the name "blue jingle". Argillite is a dense, very hard rock, is very difficult to drill because of the varying degrees of hardness. ively speaking, a cable tool would probably drill easier than a y rig in this rock.

The Lockatong argillite is one of the poorest water producing formations ie state. The rock has practically no porosity, and joints are generally nd far apart, and not very open. Also, as the rock weathers, it ices a clayey soil that fills in the fractures near the surface, ig it very difficult for water to enter the rock. Because the ground : is transmitted solely through fractures, there is a possibility nearby wells will interfere with each other. There are frequent laints of pollution because of improperly constructed domestic sewage ms, as well as improperly grouted or hung casings.

Brunswick Shale

The Brunswick makes up about 80% of the Triassic rocks in New Jersey. rock is chiefly red shale which weathers to thin flakes and fragments. the base of the formation, particularly toward the Delaware River, llite is interbedded with the shale. To the northeast, toward New , the shale becomes more sandy and pebbly. The sand beds range from w inches to over 20 feet thick, with the thicker beds to the heast. The color of these beds range from light to reddish brown. kness of the Brunswick is about 8,000 feet.

The rock is used for many purposes, the use depending largely on type of rock. Bricks and terra cotta pipe are made from soft red shale is ground up and then fired in large kilns. The sandstone was widely for building stone, and is the famous Brown Stone formerly used in York City and New Jersey.

The Brunswick of northern New Jersey usually makes a low lying topography h is frequently overlain by glacial sand and gravel deposits. In s where sandstone beds are thick and well cemented, they will form es.

The Brunswick shale has little effective porosity, but the rock has well fractured, so that closely spaced joints and fractures occur ughout the formation. Because the rock weathers so easily, the fractures usually quite open in the zone of weathering, and they may extend down several hundred feet. Where the shale is overlain by sand and gravel, ds may be expected to be good because the sand and gravel collects retains runoff which then can seep into the rock. Most wells are shed within 200 feet, but in some cases, they are up to 650 feet, cially in the New Brunswick, Newark, Union and Elizabeth areas.

Rotary drilling is generally preferred for the Brunswick, because of footage that can be made with this rig. The main problem is contamination the wells. Care should be taken to properly case the well in the upper of open fractures. Problems may often be encountered in grouting the ing because what seems to be tight shale might actually be quite open.

shale might actually be quite open. The sandstone beds in the Brunswick make adequate aquifers, but they are not as reliable as the Stockton sandsto

Locally, the ground water is high in sulphate leached from sulphate minerals that are often associated with dikes of traprock. Another source of high sulphate is the presence, locally, of sulphate minerals, such as glauberite, barite and gypsum, that occur in the red shale.

Traprock

In the construction industry traprock refers to the dark colored, heavy stone that is quarried in New Jersey from two kinds of rock; basalt and diabase. Traprock makes excellent crushed stone, and its many uses include concrete aggregate, road bed material and roofing granules. There are many large quarries located in the basalt and diabase formations near important points of consumption.

Basalt is a fine grained, dark grey rock which forms the Watchung or Orange Mountains. It was originally a series of lava flows, and at the top of each flow, a bubbly froth developed which formed a network of small openings in the rock when the lava cooled. These vuggy zones in the basalt can yield adequate supplies of water, though sulphate minerals tend to be concentrated in these zones. Sulphate in the ground water is usually greater from the diabase.

Diabase is a grey rock, coarser grained than basalt, and has a "salt and pepper" appearance. It forms the Palisades, most of the high ridges along the Delaware River and several other hills and ridges in the central part of the State. Diabase is free of vugs because it formed as one mass which was forced into the rock at some depth below the surface. The surrounding rock at both the top and bottom contacts of the diabase has been baked by the heat of the molten material, removing most of the porosity and healing most fractures. The shale at the base of the basalt, however, has been only slightly baked, and is usually a productive zone for ground water.

Traprock is very hard to drill, although the rotary bit is better for diabase and the cable tool for basalt. There is a tendency for wedging in the diabase because of the prominent, nearly vertical joints which can extend for tens of feet.

Pleistocene Deposits

Pleistocene deposits refer to the material that was deposited during the Ice Age, which started about a million years ago and ended about 10,000 years ago. It consisted of four great ice advances across the northern portion of the United States. At least three of these advances reached into New Jersey, but no ice advanced any further south than Central New Jersey.

The thick ice sheets slowly moved from north to south, carrying everyth from mud to huge boulders. As the rocks were carried along, they were gradu

round down, reducing the size of the boulders by the grinding action of the ce.

When the ice sheet moved far enough south so that it was melting ist as fast as the ice was advancing, the front of the ice sheet became tationary. At this point, the sediment and rock was released from he melting ice. If the material was dumped into a pile at the front f the ice, it formed what is called a terminal morain. A morainal eposit consists of all sizes of material, including clay, sand, pebbles id boulders. All of this is piled helter-skelter just as the ice dumped t. The terminal moraine makes an irregular line passing through the owns of Belvidere, Hackettstown, Dover, Morristown, Summit, Metuchen and arth Amboy.

In many cases, however, the water from the melting ice created streams ich washed over the sediments, carried them a short distance, and redeposite em. These then became stratified deposits because the water laid down ie sand and gravel in layers. In these deposits each bed is usually ade up of one size of silt, sand or pebbles. The size of the material epends on how fast the stream was flowing, the faster the stream, the rger the material.

The kinds of rock in the glacial deposits depends on the resistance f the rock to the grinding action of the ice, and on the direction f ice movement. Soft rocks such as shale or limestone are rapidly ground wn to "dust", while hard rocks like quartzite or granite are slowly rn down. Because the main direction of the ice was north to south, ly those rocks located north of the glacial deposits are found.

Sand and gravel are very important in the construction industry. is used for such varied purposes as fill, concrete aggregate and casionally as beach sand on lakes. The more clayey material and deposits ntaining abundant shale or weathered limestone fragments, are not itable for some uses.

Water bearing qualities of the Pleistocene deposits depend on size the material, sorting, thickness and extent of the deposit. In fine ained silty or clayey deposits, little water can be expected. The very ose packing of the individual grains greatly reduces the permeability ability of the material to pass water.

Sorting is very important, and it is this quality which makes the fference in the water bearing capability of morainal and stratified deposits. rainas have very poor permeability because all the spaces between the rge rocks are filled with fine grained material, making it impossible for ch water to pass through. Stratified deposits, however, are generally clean, d have good sorting, with each bed having a particular size. In this kind material the porosity and permeability are high and a great deal of ter can be expected.

Thickness of the deposit is also important. A thin, limited deposit sand and gravel can store only a small amount of water. There is ways the danger of pollution in a thin deposit of this material at e surface.

The areal extent of the deposit determines how much water is able to ent the material. A small isolated sand and gravel deposit will contain only the amount of water that falls on it from rain or runoff from nearby slopes. Such a deposit can be severely affected by short drought periods, and can be pumped dry. A large deposit, or a long, sufficiently wide, linear deposit will receive more rainfall, and much more runoff. Because the storage capacity is greater and more water can enter the deposit, it is not as affected by dry spells as the smaller deposits. This type of deposit can be expected to support large capacity wells for industrial or domestic use.

Abundant water is frequently encountered at the contact of the Pleistocen deposits with the top of the underlying bedrock. This rock surface makes a relatively impervious layer along which a great deal of water will flow.

Wells drilled in Pleistocene deposits are frequently easier to put down than rock wells, but they also have many problems not encountered in rock wells. The entire well requires casing, as well as a screen, except in special cases where a gravel bed is well cemented together. In poorly sorted beds, where there are grains of many different sizes, the slot-size of the screen is important, and extended developing may be necessary to remove the fine grained sand and silt.

Large boulders within the finer grained sands and gravels can also be a major problem. The bit may slip off the rock and go out of plumb, or simply make the rock spin so that the drill can go no further. Many wells have to be relocated because of this. Boulders sticking out from the side of the hole may make it impossible to put down the casing or can bend the casing. When this happens, a smaller diameter casing will be required to go deeper. Caving in of boulders and sand at a water bearing horizon may be a problem requiring bailing and heavy pumping.

Care must be taken to see that the seal between the screen and casing is tight and there are no holes in the screen or casing. If there is such a leak into the well, a small amount of sand may continually be pumped out of the well.

Water quality is usually good. The chemical characteristics depend on the kinds of rock in the sand and gravel deposit. Hardness and iron would be the major problems of this type. Pollution is always a potential problem because the effluent can travel through the deposit more rapidly than it can be degraded.

Ground Water Quality

Normally, the kinds and amounts of dissolved "minerals" in ground water depend upon the types of rock through which the water has moved and on the soluble products derived from rock weathering. The quality of ground water is also modified by recharge from surface supplies. In populated areas, water quality may be impaired by chemical, organic or biological materials. The heavy use of liquid nitrogen fertilizer poses a constant threat to ground water in agricultural areas. A well that draws

ATTACHMENT F

FOR RPS Copy Ewyan

Reference Purposes:

SURFACE WATER INTAKE LOCATIONS
BUREAU OF SAFE DRINKING WATER

Prepared by: Michael Mariano

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
0102001	ATLANTIC CITY WATER DEPARTMENT	609-345-3315	ABSECON	DOUGHTY POND - South tip - Mays Landing Rd. & Mill Rd.
0238001	HACKENSACK WATER DEPARTMENT	201-767-9300	PARAMUS	SADDLE RIVER - South of intersection of Paramus Rd. & Midland Ave.
			ORADELL	HACKENSACK RIVER - At Martin Ave.
			NORTHVALE	SPARK HILL CREEK - Northwest of intersection of Pegasus Ave. & Hill Terr.
			ORADELL	LONG SWAMP BROOK - At Martin Ave.
0305001	BURLINGTON CITY WATER DEPARTMENT	609-386-0307	EAST BURLINGTON	DELAWARE RIVER - 1/4 mile north of Assiscunk Creek
			BURLINGTON ISLAND	BURLINGTON ISLAND LAKE
0325001	FORT DIX	609-562-5040		RANCOCAS CREEK
1613001	NJDWSC	201-575-0225	POMPTON LAKES	RAMAPO RIVER - At Pompton Lake (pump to Wanaque Res.)
			WANAQUE	WANAQUE RESERVOIR - Ringwood Ave & Oricchio Ave
0717001	CITY OF ORANGE	201-762-6000	SOUTH ORANGE	ORANGE RESERVOIR - On West branch of Rahway River 40 ft upstream from dam

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STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
0712001	NJ AMERICAN NORTHERN DISTRICT	201-376-8800	MILLBURN	PASSAIC RIVER - At Kennedy Parkway
			SHORT HILLS	CANOE BROOK - North of Route 24
			CALDWELL	POMPTON RIVER - At Bridges Rd.
0714001	NEWARK WATER DEPT	201-256-4965		PEQUANNOCK WATER SHED
0906001	JERSEY CITY WATER DEPARTMENT	201-547-4390	BOONTON	BOONTON RESERVOIR - 200 yds northwest of Washington St Bridge
			ROCKAWAY	SPLIT ROCK RESERVOIR - Empties into Boonton Res. via Rockaway River
1017001	LAMBERTVILLE WATER DEPARTMENT	609-397-0526	LAMBERTVILLE	SWAN CREEK RESERVOIR EAST
			LAMBERTVILLE	SWAN CREEK RESERVOIR WEST
			LAMBERTVILLE	DELAWARE-RARITAN CANAL - At Swan St. (Emergency)
1111001	CITY OF TRENTON	609-989-3208	TRENTON	DELAWARE RIVER - At Rt 29 north of Calhoun St. Bridge
1216001	PERTH AMBOY	908-826-0290	OLD BRIDGE	TENNENTS POND - At Waterworks Rd.
1225001	MIDDLESEX WATER CO	908-634-1500	EDISON	DELAWARE-RARITAN CANAL & MILLSTONE RIVER - At Rt 18

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1214001	NEW BRUNSWICK WATER DEPARTMENT	908-745-5060	NEW BRUNSWICK	LAWRENCE BROOK - At Burnet St St.
			NEW BRUNSWICK	DELAWARE-RARITAN CANAL - At George St & College Ave
1214001	NORTH BRUNSWICK	908-247-0922	FRANKLIN TWP	DELAWARE-RARITAN CANAL - At Suydam Ave.
1219001	SAYERVILLE	908-390-7000	OLD BRIDGE	SOUTH RIVER - At Main St North of Rt 18
1352005	NEW JERSEY WATER SUPPLY AUTH.		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of Garden State Parkway (Pump to Manasquan Resevior)
1345001	NJ AMERICAN - MONMOUTH		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of GSP (Pump to Glendola Reservoir)
			NEPTUNE TWP	SHARK RIVER - Off Corlies Ave. 2000' North of GSP
			NEPTUNE TWP	JUMPING BROOK - At Greensgrove & Corlies Aves
			LINCROFT	SWIMMING RIVER RESERVOIR - 1000' West of Swimming Riv.
1326004	MATCHAPONIX		MANALAPAN	MATCHAPONIX BROOK - At Wilson Ave.
1401001	TOWN OF BOONTON	201-299-7740	MONTVILLE	TAYLORTOWN RESERVOIR - At Taylortown Rd.

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1403001	BUTLER WATER DEPT	201-838-7200	BUTLER	KIKEOUT RESERVOIR - At Resevior Rd.
1424001	SOUTH EAST MORRIS COUNTY	201-538-5600	MENDHAM	CLYDE POTTS RESERVOIR - Cold Hill Rd & Woodland Rd
1506001	BRICK TWP	908-458-7000		METEDECONK RIVER
1603001	HALEDON WATER DEPT		HALEDON	HALEDON RESERVOIR - Lower Basin pump station at Belmont Ave.
1605002	PASSAIC VALLEY WATER COMMISSION	201-256-1566	WAYNE	POMPTON RIVER - At Confluence of Ramapo & Pequannock Rivers
			TOTOWA	PASSAIC RIVER - At Union Blvd.
1708300	E.I. DUPONT PENNSVILLE	609-299-5000		SALEM CANAL
1712001	SALEM WATER DEPT	609-935-0350	CLINTON TWP	LAUREL LAKE - At Waterworks Rd & Lake Ave.
			ALLOWAY TWP	ELKINTON MILL POND - Waterworks Rd. 3 miles east of Laurel Lake (Seasonal)
1903001	BRANCHVILLE WATER DEPARTMENT	201-948-6463	FRANKFORD TWP	BRANCHVILLE RESERVOIR - 7300' northeast of Mattison Ave & Mattison School Rd.
1906002	FRANKLIN WATER DEPT	201-827-7060	FRANKLIN BOROUGH	FRANKLIN POND - Franklin Ave. Across from plant
1915001	NEWTON WATER DEPT	201-383-3521	SPARTA TWP	MORRIS LAKE

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STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1921001	SUSSEX WATER DEPT	201-967-5622	WANTAGE TWP	COLESVILLE RESERVOIR - At Brink Rd. 400' west of Rt. 23
2013001	RAHWAY WATER DEPT	201-388-0086	RAHWAY	RAHWAY RIVER - At pump station off Valley Rd & Lambert St.
2004002	ELIZABETHTOWN WATER COMPANY	201-345-4444	BRIDGEWATER TWP	RARITAN & MILLSTONE RIVERS - At confluence
2108001	HACKETTSTOWN MUA	201-852-3622	DRAKESTOWN	MINE HILL RESERVOIR - Off Mine Hill Rd.
			DRAKESTOWN	BURD RESERVOIR - Off Reservoir Rd. Southeast of

SUMMARY OF WATER USE FROM THE DELAWARE RIVER AND TIDAL TRIBUTARIES 1988
INCLUDES FUTURE WATER USE PROJECTS APPROVED BY DRBC AS OF AUGUST 1989
SORTED BY RIVER MILE FROM MOUTH OF DELAWARE BAY

ID	NAME	YR	RIVER MILE	TRIB RIVER MILE	WITHDRAWAL IN MILLION GAL PER DAY	SOURCE
5APA	ROHM & HAAS-BRISTOL	88	118.50		17.059	DELAWARE RIVER
5APA	BRISTOL BORO	88	118.80		5.982	DELAWARE RIVER
7ANJ	STEPAN CO-INDUSTRIAL CHEMICALS DIV	88	121.70		8.841	DELAWARE RIVER
5APA	USX-US STEEL DIV-FAIRLESS WORKS	88	127.20		0.028	DELAWARE RIVER
7ANJ	PSE&G-MERCER GEN STA	88	127.40		179.679	DELAWARE RIVER
4NJ	TRENTON WATER WORKS	88	130.50		596.142	DELAWARE RIVER
4PA	MORRISVILLE BORO	88	134.50		31.415	DELAWARE RIVER
4PA	PA AMERICAN WCO-YARDLEY DIST	88	134.70		1.980	DELAWARE RIVER
4NJ	NAVAL AIR PROPULSION CENTER	88	137.30		1.576	DELAWARE RIVER
4PA	YARDLEY BALL CORP	88	137.60		0.150	DELAWARE RIVER
4PA	UNION MILLS CONDOMINIUMS-NEW	88	137.80		0.090	DELAWARE RIVER
4NJ	DELAWARE & RARITAN CANAL DIVERSION	88	146.00		0.000	DELAWARE RIVER
4PA	PECO-POINT PLEASANT DIVERSION-NEW	88	156.20		75.000	DELAWARE RIVER
4PA	NORTH PENN & N WALES-POINT PLEASANT-NEW	88	156.87		0.000	DELAWARE RIVER
4NJ	JAMES RIVER CORP-MILFORD MILL	88	156.87		0.000	DELAWARE RIVER
4NJ	JCP&L-GILBERT #1-3	88	166.70		3.039	DELAWARE RIVER
4NJ	JCP&L-GILBERT #8	88	171.30		56.866	DELAWARE RIVER
2PA	EASTON CITY	88	171.30		1.115	DELAWARE RIVER
2PA	PP&L-MARTINS CREEK 3 & 4	88	185.10		7.505	DELAWARE RIVER
2PA	PP&L-MARTINS CREEK 1 & 2	88	191.50		12.237	DELAWARE RIVER
4NJ	BASF CORP-INMONT DIV,BELVIDERE	88	191.50		83.619	DELAWARE RIVER
2NJ	HOFFMAN-LAROCHE INC,BELVIDERE	88	198.10		0.226	DELAWARE RIVER
2PA	METROPOLITAN EDISON-PORTLAND	88	201.00		2.631	DELAWARE RIVER
		88	205.30		243.033	DELAWARE RIVER
	TOTAL WITHDRAWALS FROM DEL R 1988				6,798.296	

SUMMARY OF WATER USE FROM THE DELAWARE RIVER AND TIDAL TRIBUTARIES 1988

INCLUDES FUTURE WATER USE PROJECTS APPROVED BY DRBC AS OF AUGUST 1989

SORTED BY RIVER MILE FROM MOUTH OF DELAWARE BAY

SB	NAME	YR	RIVER MILE	TRIB RIVER MILE	WITHDRAWAL IN MILLION GAL PER DAY	SOURCE
3NJ	PSE&G--SALEM	88	50.30		2,556.475	DELAWARE RIVER
3NJ	PSE&G--HOPE CREEK	88	51.50		55.157	DELAWARE RIVER
10ADE	STAR ENTERPRISES (FORMER TEXACO, GETTY)	88	51.50		327.027	DELAWARE RIVER
10ADE	ICI AMERICAS INC-ATLAS POINT	88	66.60		5.307	DELAWARE RIVER
3NJ	EI DUPONT-CHAMBERS WORKS	88	68.50		90.312	DELAWARE RIVER
3NJ	ATLANTIC CITY ELEC-DEEPWATER	88	68.61		145.377	DELAWARE RIVER
3DE	EI DUPONT-EDGEMOOR	88	72.00		6.923	DELAWARE RIVER
3DE	DELMARVA P&L--EDGEMOOR 5	88	72.20		384.679	DELAWARE RIVER
3DE	DELMARVA P&L--EDGEMOOR 1-4	88	72.20		198.334	DELAWARE RIVER
3DE	PHOENIX STEEL--CLAYMONT (SEE CITISTEEL)	88	77.70		0.000	DELAWARE RIVER
3DE	CITISTEEL USA INC (FORMER PHOENIX)	89	77.70		0.000	DELAWARE RIVER
3DE	GENERAL CHEMICAL CORP	86	78.30		28.589	DELAWARE RIVER
5BPA	SUN REFINING & MKTG CO	88	79.20		14.202	DELAWARE RIVER
5BPA	BP OIL INC	88	80.10		77.268	DELAWARE RIVER
7BNJ	ROLLINS ENVIRONMENTAL SERVICES	88	80.66	2.80	1.334	RACCOON CREEK
5BPA	PECO-CHESTER GEN STA	88	81.20		0.000	DELAWARE RIVER
5BPA	SCOTT PAPER CO	88	83.00		23.273	DELAWARE RIVER
5BPA	TINICUM PROP ASSOC (FORMER WESTINGHOUS	88	84.70		0.180	DELAWARE RIVER
5BPA	WESTINGHOUSE ELEC-SEE TINICUM PROPERTIE	88	84.70		0.000	DELAWARE RIVER
5BPA	PECO-EDDYSTONE 3 & 4	88	85.00		469.757	DELAWARE RIVER
5BPA	PECO-EDDYSTONE 1 & 2	88	85.00		518.569	DELAWARE RIVER
7BNJ	EI DUPONT-REPAUNO	88	86.30		42.959	DELAWARE RIVER
7BNJ	MOBIL OIL CORP-PAULSBORO	88	87.30		10.625	DELAWARE RIVER
7BNJ	ESSEX INDUSTRIAL CHEMICALS	88	90.00		0.008	DELAWARE RIVER
5APA	CHEVRON USA	88	92.47	1.94	21.795	SCHUYLKILL RIVER
5APA	ATLANTIC REFINING & MKTG CO	88	92.47	3.75	5.804	SCHUYLKILL RIVER
5APA	PHILADELPHIA GAS WORKS-PASSYUNK	88	92.47	5.19	0.257	SCHUYLKILL RIVER
5APA	PECO-SCHUYLKILL GEN STA	88	92.47	8.49	39.973	SCHUYLKILL RIVER
7ANJ	COASTAL EAGLE POINT OIL CO	88	94.00		1.754	DELAWARE RIVER
5APA	PECO-SOUTHWARK GEN STA	88	97.30		0.000	DELAWARE RIVER
7ANJ	MACANDREWS & FORBES (SUPPLY US GYPSUM)	88	97.80		0.091	DELAWARE RIVER
7ANJ	RCA CORPORATION	88	100.60		3.620	DELAWARE RIVER
5APA	PECO-DELAWARE GEN STA	88	101.30		142.008	DELAWARE RIVER
5APA	PHILADELPHIA GAS WORKS-RICHMOND	88	102.10		10.779	DELAWARE RIVER
7ANJ	WEST BANK OIL COVELF ASPHALT	88	102.86		0.003	DELAWARE RIVER
5APA	PECO-RICHMOND GEN STA	88	104.20		1.197	DELAWARE RIVER
7ANJ	GEORGIA-PACIFIC CORP	88	104.30		0.108	DELAWARE RIVER
5APA	ROHM & HAAS-PHILADELPHIA	88	106.20		7.483	DELAWARE RIVER
7ANJ	NEW JERSEY AMERICAN WCO-EXPERIMENTAL-I	88	109.90		0.000	DELAWARE RIVER
5APA	PHILADELPHIA CITY-TORRESDALE INTAKE	88	110.50		216.200	DELAWARE RIVER
7ANJ	PSE&G-BURLINGTON GEN STA	88	117.20		60.327	DELAWARE RIVER
7ANJ	BURLINGTON CITY	88	118.45		1.929	DELAWARE RIVER

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SUMMARY OF WATER USE FROM THE DELAWARE RIVER AND TIDAL TRIBUTARIES 1988

INCLUDES FUTURE WATER USE PROJECTS APPROVED BY DRBC AS OF AUGUST 1989

SORTED BY RIVER MILE FROM MOUTH OF DELAWARE BAY

SB	NAME	YR	RIVER MILE	TRIB RIVER MILE	WITHDRAWAL IN MILLION GAL PER DAY	SOURCE
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10ADE	ICI AMERICAS INC-ATLAS POINT	88	66.60		5.307	DELAWARE RIVER
3NJ	EI DUPONT-CHAMBERS WORKS	88	68.60		90.312	DELAWARE RIVER
3NJ	ATLANTIC CITY ELEC-DEEPWATER	88	68.61		145.377	DELAWARE RIVER
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3DE	DELMARVA P&L--EDGEMOOR 5	88	72.20		384.679	DELAWARE RIVER
3DE	DELMARVA P&L--EDGEMOOR 1-4	88	72.20		198.334	DELAWARE RIVER
3DE	PHOENIX STEEL--CLAYMONT (SEE CITISTEEL)	88	77.70		0.000	DELAWARE RIVER
3DE	CITISTEEL USA INC (FORMER PHOENIX)	88	77.70		0.000	DELAWARE RIVER
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5BPA	PECO-CHESTER GEN STA	88	81.20		0.000	DELAWARE RIVER
5BPA	SCOTT PAPER CO	88	83.00		23.273	DELAWARE RIVER
5BPA	TINICUM PROP ASSOC (FORMER WESTINGHOUS	88	84.70		0.180	DELAWARE RIVER
5BPA	WESTINGHOUSE ELEC-SEE TINICUM PROPERTIE	88	84.70		0.000	DELAWARE RIVER
5BPA	PECO-EDDYSTONE 3 & 4	88	85.00		469.757	DELAWARE RIVER
5BPA	PECO-EDDYSTONE 1 & 2	88	85.00		518.569	DELAWARE RIVER
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5APA	ATLANTIC REFINING & MKTG CO	88	92.47	3.75	5.804	SCHUYLKILL RIVER
5APA	PHILADELPHIA GAS WORKS-PASSYUNK	88	92.47	5.19	0.257	SCHUYLKILL RIVER
5APA	PECO-SCHUYLKILL GEN STA	88	92.47	8.49	39.973	SCHUYLKILL RIVER
7ANJ	COASTAL EAGLE POINT OIL CO	88	94.00		1.754	DELAWARE RIVER
5APA	PECO-SOUTHWARK GEN STA	88	97.30		0.000	DELAWARE RIVER
7ANJ	MACANDREWS & FORBES (SUPPLY US GYPSUM)	88	97.80		0.091	DELAWARE RIVER
7ANJ	RCA CORPORATION	88	100.60		3.820	DELAWARE RIVER
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5APA	PHILADELPHIA GAS WORKS-RICHMOND	88	102.10		10.779	DELAWARE RIVER
7ANJ	WEST PARK OIL COVELF ASPHALT	88	102.86		0.003	DELAWARE RIVER
5APA	PECO-RICHMOND GEN STA	88	104.20		1.197	DELAWARE RIVER
7ANJ	GEORGIA-PACIFIC CORP	88	104.30		0.108	DELAWARE RIVER
5APA	ROHM & HAAS-PHILADELPHIA	88	106.20		7.483	DELAWARE RIVER
7ANJ	NEW JERSEY AMERICAN WCO-EXPERIMENTAL-I	88	109.90		0.000	DELAWARE RIVER
5APA	PHILADELPHIA CITY-TORRESDALE INTAKE	88	110.50		216.200	DELAWARE RIVER
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7ANJ	BURLINGTON CITY	88	118.45		1.929	DELAWARE RIVER

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ATTACHMENT G

RECEIVED

JUL 2 3 1993

CORPORATE STATUS REPORT DATE: 071993

CORP. NAME: BELLEVILLE INDUSTRIAL CENTER

CORP TYPE: DP STATUS: ACTIVE STATUS DATE: 000000

INCORPORATION DATE: 0606968 STATE: NJ FOLDER NO: S 102857

CORPORATION NO.: 1978850000 LAST ANNUAL REPORT: 93

REGISTERED AGENT: LYNN CLURMAN

REGISTERED OFFICE: 681 MAIN ST

BELLEVILLE , NJ 07109

ID NO: 1978-0300-00 STATE: NJ 05/1993 93

TYPE 0 TOTAL FEE DUE $20.00 (1) FED ID # (2) SIC #

NAME BELLEVILLE INDUSTRIAL CENTER

MAIN BUSINESS ADDRESS 681 MAIN ST BELLEVILLE NJ 07109

OFFICER/TITLE ADDRESS

OFFICER XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

OFFICER PLEASE ENTER OFFICER/TITLE AND ADDRESS INFORMATION IN BOX 8.

OFFICER XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

AGT NBR LYNN CLURMAN 681 MAIN ST BELLEVILLE NJ 07109

MUST BE COMPLETED/TYPED ADDRESS CITY STATE ZIP

MAIN BUSINESS ADDRESS 681 Main Street Belleville, New Jersey 07109

OFFICER/TITLE/ADDRESS Lynn Clurman 681 Main Street, Belleville, New Jersey 07109

OFFICER/TITLE/ADDRESS

OFFICER/TITLE/ADDRESS

DO YOU HAVE A PRINCIPAL BUSINESS OFFICE IN N.J.? ☒ YES ☐ NO ADDRESS 681 MAIN ST. BELLEVILLE, N. J. 07109

5-29-93

SIGNATURE OF CHAIRMAN OF BOARD, PRES., V.P., SEC., ASST. OR LIMITED PARTNER DATE

RECEIVED

JUL 2 3 1993

FILED

5-14-93

DANIEL J. DALTON

SECRETARY OF STATE

Name and Registered Agent

LYNN CLURMAN
681 MAIN ST
BELLEVILLE NJ 07109

Name and Main Business Address

BELLEVILLE INDUSTRIAL CENTER
681 MAIN ST
BELLEVILLE NJ 07109

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ATTACHMENT H

State of New Jersey
DEPARTMENT OF STATE
CN-308
TRENTON, NEW JERSEY 08625

Your request has been rejected for one of the following reasons:

____ Improper fee. Fee is $_____. Make checks payable to the SECRETARY OF STATE.

____ For photocopy work, submit a blank check, made payable to the SECRETARY OF STATE limited to "Not to exceed $50.00".

Other payment options: Visa/MasterCard or Depository Account. Please provide your credit card number and date of expiration or your Depository Account Number.

____ NO RECORD of the Corporation or Limited Partnership specified in your letter. Search fee billed $5.00

X No Annual Reports filed.

____ Annual Report for the year _____ is not available.

____ Latest Annual Report is not available due to microfilming.

X Other: No annual reports filed for Ideal Plating and Polishing Co. Inc.

Please send your check and/or request to:

Department of State
Division of Commercial Recording
Corporate Records Section
CN-450
Trenton, NJ 08625
(609) 530-6430

Audit Code #1

ID NO 0100-0484-13 STATE NJ FILING DATE 09/1982 YEARS DUE 92
TYPE 0 TOTAL FEE DUE $20.00 (1) FED ID # 22-2174825 (2) SIC # 3471

NAME IDEAL PLATING AND POLISHING COMPANY
MAIN BUSINESS ADDRESS 681 MAIN STREET POB 100 BELLEVILLE NJ 07109

OFFICER ADDRESS
OFFICER XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
OFFICER PLEASE ENTER OFFICER/TITLE AND ADDRESS INFORMATION IN BOX 5 469337
OFFICER XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
AGENT NORMAN A. COHEN 149 KEARNY AVENUE PERTH AMBOY NJ 08862
ADDRESS CHANGE ADDRESS STATE ZIP

MAIN BUSINESS ADDRESS 681 Main Street, P.O. Box 100, Belleville, N.J. 07109
OFFICER/TITLE/ADDRESS Ronald Knigge- 681 Main Street, P.O. Box 100, Belleville, N.J. 07109
OFFICER/TITLE/ADDRESS
OFFICER/TITLE/ADDRESS

DO YOU HAVE A PRINCIPAL PLACE OF BUSINESS OFFICE IN N.J.? ☒ YES ☐ NO ADDRESS 681 Main Street, P.O. Box 100, Belleville, N.J. 07109

Ronald F. Knigge 9/13/92
SIGNATURE OF AUTHORIZED PERSON DATE

Name and Registered Agent

NORMAN A. COHEN
149 KEARNY AVENUE
PO BOX 31
PERTH AMBOY NJ 08862

FILED
10/2/92
Office Name and Main Business Address

IDEAL PLATING AND POLISHING COMPANY
681 MAIN STREET POB 100
BELLEVILLE NJ 07109

RECEIVED

JUL 26 1

CORPORATE STATUS REPORT

DATE: 071593

CORP. NAME: IDEAL PLATING & POLISHING CO.

CORP TYPE: DP STATUS: VOID STATUS DATE: 060376

INCORPORATION DATE: 0509961 STATE: NJ FOLDER NO: S 019882

CORPORATION NO.: 4874025000 LAST ANNUAL REPORT: 76

REGISTERED AGENT: CHARLES H. COTTINGHAM

REGISTERED OFFICE: 744 BROAD ST

NEWARK N J , 07102

RECEIVED

JUL 26 1993

CORPORATE STATUS REPORT

DATE: 071593

CORP. NAME: IDEAL PLATING AND POLISHING COMPANY

CORP TYPE: DP STATUS: ACTIVE STATUS DATE: 000000

INCORPORATION DATE: 0930977 STATE: NJ FOLDER NO: 000000

CORPORATION NO.: 0100048413 LAST ANNUAL REPORT: 92

REGISTERED AGENT: NORMAN A. COHEN

REGISTERED OFFICE: 149 KEARNY AVENUE

PO BOX 31

PERTH AMBOY , NJ 08862

ATTACHMENT I

The Federal Leather Company, of 681 Main St., originally also made only genuine leather. But in 1922 it added artificial leather to its products and two years later, when the plant was rebuilt after a fire had completely destroyed it, the firm turned exclusively to the making of artificial leather. At that time there were only 23 firms throughout the United States engaged in making artificial leather; of these Federal was the smallest. Founded in 1916 by John Planseen with a staff of three workmen, the firm today is the largest in its field, employs 500 people, and is kept busy 24 hours a day.

Among the many industrial concerns which in recent decades moved to Belleville from their original place of business was, in 1918, the Overman Tire Company, Inc., at 151 Cortlandt St., one of the foremost manufacturers of heavy duty and truck tires. Among its customers the Overman Company numbers the City of New York, whose fire engines are equipped with Overman tires; the Public Service Coordinated Transport of New Jersey; other large bus companies, and many South American and European countries. About 80 people are steadily employed, although in rush times as many as 160 have worked in the Overman factory.

A plant of one of the country's largest paint manufacturers, L. Sonneborn Sons, Inc., is located on Hancock Avenue, near the Nutley townline. The firm was founded in 1903 in Baltimore, Md., by Dr. Ferdinand Sonneborn. Two years later the manufacturing plant of the concern was moved to Belleville. Besides this main plant, the firm operates refineries at Petrolia and Franklin, Pa., and warehouses in all the principal cities. Its main office is at New York City. Besides paints and industrial finishes, the firm manufactures white oils and petrolatums for medicinal cosmetic purposes, concrete floor hardeners, and damp and waterproofing products for the building trades. The plant employs about 100 people.

Belleville's trend toward diversified industries is further exemplified by the presence of concerns manufacturing products as different from each other as felt hats and shaving brushes, tractors and ceramics, tools and women's dresses. Its plants include breweries and box factories, laundries and machine shops.

Nor has that tendency at all exhausted itself. Even the historical Second River site on which the Hendricks copper mill stood for a century and a half will soon be occupied again. Just as Nicholas Roosevelt's stamping mill once was absorbed by the Hendricks mill, so the old wire works itself has been absorbed now by a newcomer. Copper will be abandoned in favor of cosmetics.

From Richard A. Sl ter's
"History of Bel..

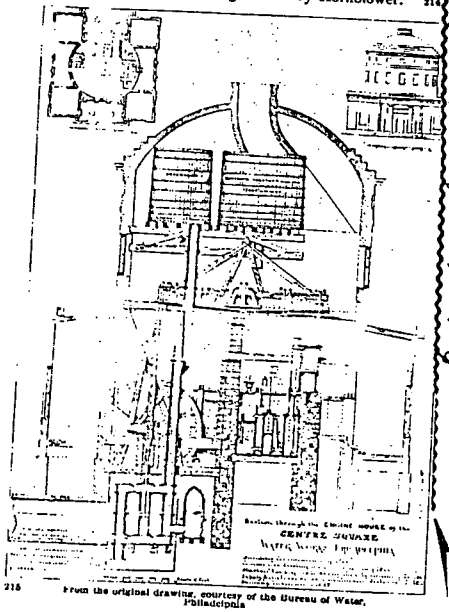
The Epic of Industry Kerr 973 V5 pg 86

Steam Engines Belleville

86 THE PAGEANT OF AMERIC

CYLINDER OF THE FIRST STEAM ENGINE IN AMERICA

Watt's engine was received with enthusiasm by the world's mechanics and engineers. The first steam engine erected in America was a Watt engine. This engine was imported from England in 1753 by Colonel John Schuyler for the purpose of pumping water from his copper mine opposite Belleville, near Newark, New Jersey. The engine was brought to America by Josiah Hornblower, of a famous family of British engineers, and uncle of Jonathan Hornblower, Jr., who invented the compound engine. Josiah Hornblower probably had something to do with the building of the engine he imported. Finding the American environment agreeable he decided to settle here and for many years he was in charge of the mines at Belleville. During the Revolution, the engine house and mine-works were destroyed by fire but were rebuilt in 1794. Hornblower played an honorable part in the American Revolution and following the war was a member of Congress and later Judge of the Essex County Common Pleas Court. A cylinder is all that is left of the original engine brought over by Hornblower.



From the original drawing, courtesy of the Bureau of Water, Philadelphia

Belleville's Past

Belleville Times 12/3/53 p 21

However, the mill went unbuilt. In 1815 or '16 its site was taken over by Thomas Uffington, an English goldbeater, who employed 20 to 25 men. Several years later Uffington sold the goldbeating part of his business to a certain Mr. Jones of New York City, and turned to the manufacture and rolling of sheet brass, utilizing the local copper and the zinc from the Franklin township mines in Sussex County. In 1818 he rolled the first copper wire. He now included the making of "umbrella furniture, runners, ferrules, tips and strainers, for which he rolled the wire." It was with Uffington's preoccupation with the drawing of copper wire that the wire industry, which eventually became firmly entrenched in Belleville's economic scheme, first made its appearance.

Wire Industry Early

Soon after Uffington purchased a brass lamp business begun by a certain Mr. Bragg in the old Courtlandt house, "nearly opposite the Big Rock, adjoining the Minard Coeyman tract," and relinquished by Bragg when he failed to make a go of it. By now Uffington's workers numbered 50 to 60, "12 or 15 of whom were apprentices and provided for in his own house," which was the McComb mansion on 123 Main Street. Next to the Hendricks mills, Uffington had become the largest employer in town.

Uffington

Probably in 1833 Uffington ran into foul weather and sold his business to William Stephens, who had conducted his own brass lamp factory at the premises of his father-in-law, James Hornblower on the east side of Main Street, just south of the old Dutch church. Stephens took a Thomas Thomas and a Mr. Fuller as his partners. They took the firm name of Stephens, Thomas & Fuller.

The crisis of 1837 threw its sudden damp on the hopeful signs of industrial expansion. In fact, William Stephens, the senior partner of his firm, saw so little hope for the future that he offered for lease "the premises formerly occupied by the subscriber as a Lamp Factory and Brass Foundry...being situated in the Main Street and in the center of the village and having a spacious dock in the rear.

From Richard A. Shafter's "History of Belleville"

Belleville - Industry Early

Rich - Industry Early

12

Governor Florio sends letter to s

For recognition of Belleville's role in history

Seeking
Governor Ji
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Belleville. F
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Newark No

STATE OF NEW JERSEY
OFFICE OF THE GOVERNOR
CN-001
TRENTON
08625

JIM FLORIO
GOVERNOR

April 30, 1992

Honorable Robert Roe
U. S. House of Representatives
2243 Rayburn
Washington, D. C. 20515

Dear Bob:

I am pleased to let you know about an important proclamation that I issued last month recognizing Belleville, New Jersey, as the Birthplace of the American Industrial Revolution.

In my proclamation, the State of New Jersey honors Josiah Hornblower and Belleville, New Jersey, for the historical contributions of the arrival of the first steam engine in the United States in 1753, and for the building, in a Belleville foundry, of the first steam engine in America. This steam engine powered the first experimental steamboat in America, The Polacca, which negotiated the Passaic River on October 21, 1798, several years before Robert Fulton's Clermont sailed the Hudson.

I believe that Belleville, New Jersey, has the right to be nationally recognized as the Birthplace of the American Industrial Revolution. I would appreciate anything that you could do to aid the city of Belleville in this quest for national recognition of their contributions.

I would like to share with you the enclosed copy of my proclamation honoring Belleville. Thank you for your help in this matter.

Very truly yours,

Jim Florio
Governor

ATTACHMENT K

DEPARTMENT OF PUBLIC SAFETY
FIRE DIVISION
434 WASHINGTON AVENUE
BELLEVILLE, NEW JERSEY 07109

Telephone (201) 759-1502

MATTHEW A. PICA
COMMISSIONER

GEORGE SBARRA
CHIEF

June 29, 1981

Chief George Sbarra

Re: Ideal Plating Fire
681 Main Street
Belleville, N. J.

Responded to report of smoke in the rear of building, 681 Main Street, and found smoke emitting from exhaust fan blowing towards Pathmark parking lot.

Entrance to fire was hindered first by gate locked which was cut, secondly by overhead door in rear secured by several locks. Collapsible door was broken to gain entrance and discovered fire in vats.

Probable cause was by overheated wire controlling thermostat for hood from above vats.

Fire was extinguished by booster from Engine 4 confined to immediate area. Heavy smoke condition from caustics being used required masks to enter area. Ventilation of entire building was necessary.

E.F.C. Alarm Company notified and owner responded to scene.

Advised owner to have an electrician response as soon as possible since we were unable to disconnect power. Instructed Mr. Knigge owner of Ideal Plating to segregate chemicals, caustics and flammables by using pallats, repair self-closing fire doors, provide smoke alarms and clear obstructed aisles.

Respectfully,

Thomas Nisivoccia, Captain
Fire Code Official
Belleville Fire Department

TN:ce

K1

DEPARTMENT OF PUBLIC SAFETY
FIRE DIVISION
434 WASHINGTON AVENUE
BELLEVILLE, NEW JERSEY 07109

Telephone (201) 759-1502

MATTHEW A. PICA
COMMISSIONER

GEORGE SBARRA
CHIEF

To: Chief George Sbarra
From: Dep. Chief Dawson Bloom
Date: November 25, 1981
Re: Fire at Ideal Plating and Polishing
Company 681 Main St. Building #40

Received a phone alarm from the Belleville Police at 0510 Hours this date stating their patrol car reported a heavy smoke condition at the above premises. A first alarm assignment was dispatched. Police notified dispatcher that gate was locked to rear of premises. Engine No. 4, the first arrival company cut the chain to gain entry to plant area. Heavy smoke was emitting from a skylight at mid point on the roof. All personnel were ordered to don self contained breathing apparatus before entry due to the nature of the occupancy.

While forcible entry was being attempted through the panels of an overhead door, an 1 1/2" attack line was laid and ventilation was prepared at the skylight. The dispatcher was notified to call in off-duty personnel to man a reserve piece of apparatus. Engine No. 4 attack line crew radioed the fire had been located and the ventilation and attach operations were coordinated.

Engine No. 5 the 2nd due company caught a hydrant and laid 2 supply lines to Engine No. 4. Truck No. 6 was located adjacent to the skylight and was prepared to cover roof area if needed. Attack line crew reported fire was contained in an area of plastic vats and was under control. Ventilation and overhaul operation continued. A man from the Electro-Protective Corp. was on the scene and reported that they had received a burglar alarm from these premises and had reported same to Police.

Although there were sprinkler heads and piping on the premises, no sprinkler head operated and we received no fire alarm. The plant manager and the owner arrived on the scene and I was informed at this time the sprinkler system had been shut off previously due to broken pipes. Apparatus returned to quarters after ventilation and overhaul were completed. All apparatus were in service and off duty personnel released at 0745, except for Fireman Depczek, who was retained by Acting Deputy Chief Sorrentino due to low manpower. He had to have someone fill and transport SCBA Bottles. Deputy Chief Baldwin, Fireman J. Cancelliere, Fireman Cetrulo were the off duty personnel called in.

K2

The cause of the fire appeared to be the overheating of a recently emptied polypropylene vat. Damage was confined to electric wires, three melted vats and burning of exposed wooden ceiling. Forcible entry and ventilation caused damage to the overhead door, skylight windows, and other windows on ground floor.

I feel that the lack of sprinkler protection and automatic alarm system on these premises bears closer scrutiny. The fact that the Fire Department was notified due to the activation of a burglar alarm probably aided us in containing this fire at the time of day specified and the location of the premises.

Respectfully submitted,

Dawson Bloom, Deputy Chief

K3

ATTACHMENT L

3-12-80
Chief George Sbarra
Fire @ Synfax Mfg. Co.

Dear Chief,
At 1534 Hrs. We received a telephone alarm reporting a fire at Synfax Mfg Co.

Synfax Mfg Co. Bldg's # 65-66-67
681 main St
Bill Kissel - President - 63 Claremont ave. Montclair
Alan Hertz V. Pres.
Neil Bloomberg Plant Manager

Upon Arrival Eng#4 first due Company encountered fire + smoke condition in Bldg # 65-66-67 - Fire was attacked with pre connect 1½ + supply line were requested. Eng # 5. assisted in stretching 2-2½ supply line. Eng#1 arrived on the scene stretched an additional 1½ attack line and was supplied by 1-2½" line.

The fire involved a mixing and plastic filling operation with the main product involved being Isoparaffenic Petroleum Solvent - Trade name Isopar H.

The Auto sprinklers were operating. The Sprinkler were partialy successful but created an additional Hazard because certain amount of the liquid not extinguish - flowed on

L1

the run off water and ignited pallets and boxes in separate areas almost surrounding fire fighters.

When I reported to you that the fire was almost under control at about 1600 Hrs. an arcing wire at the mixing apparatus re ignited the fire - causing me to recall 9 men. overtime earned is listed on D.C Dambrois Daily attendance sheet.

The cause may have been an electric spark - although the involved wire may have been damaged by the fire. This fire re emphasis the need for fixed extinguishing systems such as Dry Powder and automatic shut off valves on lines supplying highly flammable liquids.

Self Contained breathing apparatus was used extensively - almost every tank on the Dept was used -
Two Chemical extinguishers were used.

All apparatus was back in service around 1830 Hours.

Loss to the Building was minimal Loss to the machinery + stock I am unable to determine.

(3)

Eng #4 was damaged
Fireman Byrne was Injured
Fireman Phelps was Injured
Accident Reports to follow

Respectfully Submitted
G. Fairfield Dec

P.S
Material Safety Data Sheet
is attached to this report.

L3

EXXON COMPANY U.S.A.
A DIVISION OF EXXON CORPORATION

Form No. OSHA-20
8/10/79
Supersedes issue
of 8/1/77
DG-1P

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME
Exxon Company, U.S.A.

EMERGENCY TELEPHONE NO.
(713) 656-3424

ADDRESS (Number, Street, City, State, and ZIP Code)
P.O. Box 2180 Houston, Texas 77001

CHEMICAL NAME AND SYNONYMS
Isoparaffinic Petroleum Solvent

TRADE NAME AND SYNONYMS
ISOPAR H

CHEMICAL FAMILY
Petroleum Hydrocarbon

FORMULA
Complex mixture of petroleum hydrocarbons.

SECTION II HAZARDOUS INGREDIENTS

	%	TLV (UNITS)
SOLVENTS	100	300 ppm*

*A TLV has not been established for this product. The value shown has been recommended by Exxon Corporation Medical Research based on consideration of available toxicological data. Additional data are being obtained to help define a recommended permanent limit. We will take further action as necessary.

SECTION III PHYSICAL DATA

BOILING RANGE
[illegible] 356-376°F 176-191°C

SPECIFIC GRAVITY (H_2O=1)
15.6°/15.6°C

VAPOR PRESSURE (mm Hg @ 20°C)
<5.0

PERCENT VOLATILE BY VOLUME (%)
100

VAPOR DENSITY (Air=1)
>5.3

EVAPORATION RATE (n-BUTYL ACETATE=1)
0.1

SOLUBILITY IN WATER
Negligible

APPEARANCE AND ODOR
Water-white liquid, [illegible] odor of very mild isoparaffinic hydrocarbon solvent.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)
Tag Closed [illegible] 140°F 60°C

FLAMMABLE OR EXPLOSIVE LIMITS — PERCENT BY VOLUME (%)

LOWER LIMIT	UPPER LIMIT
[illegible]	6.5%

EXTINGUISHING MEDIA
Foam, dry chemical, carbon dioxide, water spray or fog.

SPECIAL FIRE-FIGHTING PROCEDURES
Use air-supplied breathing equipment for enclosed areas.
Cool exposed containers with water spray. Avoid breathing vapor or mist.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Do not mix or store with strong oxidants like liquid chlorine or concentrated oxygen.

COMBUSTIBLE LIQUID

L4

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
See Section II. Recommended exposure limit is 300 ppm for 8 hour workday.

EFFECTS OF OVEREXPOSURE
Inhalation of high vapor concentrations may have results ranging from dizziness and headaches to unconsciousness. Prolonged or repeated liquid contact with the skin will dry and defat the skin leading to irritation and dermatitis.

EMERGENCY AND FIRST AID PROCEDURES
If overcome by vapor, remove from exposure immediately; call a Physician. If breathing is irregular or stopped, start resuscitation, administer oxygen. If ingested, DO NOT induce vomiting; call a Physician. In case of skin contact, remove any contaminated clothing, and wash skin with soap and warm water. If splashed into the eyes, flush eyes with clear water for 15 minutes or until irritation subsides.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY (Materials to Avoid)
Strong oxidants like: liquid chlorine, concentrated oxygen, sodium- or calcium hypochlorite.

HAZARDOUS DECOMPOSITION PRODUCTS
Fumes, smoke and carbon monoxide, in the case of incomplete combustion.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Remove all ignition sources. Keep people away. Recover free liquid. Add absorbent (sand, earth, sawdust, etc.) to spill area. Avoid breathing vapors. Ventilate confines spaces. Open all windows and doors. Keep petroleum products out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas.

WASTE DISPOSAL METHOD
Assure conformity with applicable disposal regulations. Dispose of absorbed material at an approved disposal site or facility.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type) Use hydrocarbon vapor canister or supplied-air respiratory protection in confined or enclosed spaces if needed.

VENTILATION	LOCAL EXHAUST Face velocity >60 fpm	SPECIAL Use only with adequate* ventilation.
	MECHANICAL (General) Use explosion-proof equipment.	OTHER No smoking or open lights.

PROTECTIVE GLOVES Use chemical-resistant gloves, if needed to avoid repeated or prolonged skin contact.

EYE PROTECTION Use splash goggles or face shield when eye contact may occur.

OTHER PROTECTIVE EQUIPMENT Use chemical-resistant apron or other clothing if needed to avoid repeated or prolonged skin contact.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
Keep containers closed when not in use. Do not handle or store near heat, sparks, flame or strong oxidants. Adequate* ventilation required.

*Adequate means equivalent to outdoors.

OTHER PRECAUTIONS Avoid breathing vapors. Avoid prolonged or repeated contact with skin. Remove contaminated clothing, launder before reuse. Remove contaminated shoes and thoroughly dry before reuse. Wash skin thoroughly with soap and water after contact.

FOR ADDITIONAL INFORMATION ON HEALTH EFFECTS CONTACT
Director of Industrial Hygiene
(713) 656-2443

FOR OTHER PRODUCT INFORMATION CONTACT
Manager, Marketing Technical Services
(713) 656-4929

ATTACHMENT M

To: Commissioner M. Pica
From: Deputy Chief J. Santiglia
Subject: Fire at 681 Main Street
DAte: June 13, 1983

Dear Commissioner Pica:

At approximately 1803 hours we received a phone call from a passerby reporting a fire at 681 Main Street.

All units were dispatched and responded. Enroute a black smoke condition was noted coming over Washington Avenue.

Upon arrival, a wooden structure, 10 ft. x 10 ft, approximately 100 ft. east of Building #36 was fully involved.

This area is difficult to reach since it is behind buildings and atop a 10 to 15 ft. concrete retainer wall.

Between Building #36 and the wooden structure (probably an old pump house) are approximately seven (7) above ground tanks 12,000 to 15,000 gallon capacity. They appear to be empty and no longer in use.

Also in chis area is a water tank approximately 100+ feet in height. The entire area is strewn with pipe, scaffolding and litter.

A worker from an adjacent building informed us that young boys were seen climbing up the elevated water tank structure and playing in the area.

The entire complex, especially areas like the one I described, are potentially very hazardous since it obviously has become a place that children are frequenting.

The fire, once we made access to the location, was quickly extinguished by 1-1/2" hose from Engine #4, supplied with water from Engine's #5 and #1.

All units were back in service at 1900 hours.

Respectfully submitted,

Joseph Santiglia
Deputy Chief

m

ATTACHMENT N

June 20, 1983

Chief George Sbarra
Fire Headquarters
275 Franklin Avenue
Belleville, New Jersey 07109

Dear Sir:

Due to a misunderstanding, the Fire Department was not notified when the Task Force made an outside inspection of 681 Main Street this morning.

Part of this misunderstanding is due to the lack of orders in writing concerning the Task Force inspection of 681 Main Street.

My recommendations are:

1. that a meeting be held with the following people present:

   Commissioner Pica
   Chief Sbarra
   Captain Aughenbaugh
   Captain Sorrentino
   Captain Nisivoccia

2. that an officer be named to head the Task Force for the Fire Department.

3. any meeting of the Task Force is to be scheduled by members of the Task Force.

4. that Captain Aughenbaugh, Sorrentino and Nisivoccia be members of the Task Force for the Fire Department due to the fact each one has issued violation notices to 681 Main Street.

Respectfully yours,

Charles Aughenbaugh, Jr.
Captain
Belleville Fire Department

cc: Commissioner Matthew A. Pica
Town Hall

N

ATTACHMENT O

ADM-012

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Spill Fund

FROM Galen McCreary thru Bruce Comfort GWM BC. DATE 10-9-84

SUBJECT Belleville Industrail Park, Belleville NJ #84-09-14-02C
SP07/01/10

The duty officer received a telephone call from Capt. Hands, Belleville Fire Department, that 17 drums were located outside one of the buildings. The drums were rusted and contained an oily type substance.

2 October 84

I arrived at the Belleville Fire Department at approximately 1340 and met Capt. Hands. Capt. Hands and I drove to the incident location, Belleville Industrial Park, and met with Mr. Baszil Lyssikatos, the controller. Mr. Lyssikatos took us to the drum location behind Jerico Display Corp., Bldg. 29. I observed nineteen (19) drums of which two were empty. I did not observe any labels on the drums. Mr. Lyssikatos had Technion Inc., a laboratory in the Belleville Industrail Park, take samples from the drums. Seven samples were taken and a copy of the analysis is attached. Mr. Lyssikatos said that seven samples were taken because the drums looked the same.

We returned to Mr. Lyssikatos's office and met with Mr. Ellis, owner and Mr. Krantz, maintenance supervisor. I explained to the owner how to dispose of the drums and gave him names of contractors who do that type of work. I told them the other drums would have to be sampled before a contractor would remove the drums. I indicated I would be back in two weeks to check on the removal.

I observed seven large storage tanks that were located above ground near the water tower. I did not have equipment to check if the tanks were empty. I will check on my return visit.

1500 Capt. Hands and I departed Belleville Industrail Park and returned to Belleville Fire Department.

FOC23:efw

01

Form VSC-005
6/82

07-01

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT

INCIDENT REPORT

D.W.M. ASSIGNED CASE NUMBER	HOT LINE ☐	INDEXED ☐
84-09-14-0126		
DATE: 09-14-84	TIME (Military): 1306	D.W.M. ID NO.: RV176

INCIDENT REPORTED BY:

NAME	PHONE
Capt. Hands	201-759-1502
AFFILIATION: Belleville Fire Dept.	CODE:
STREET: [redacted]	
CITY: Belleville	STATE: N.J. ZIP CODE:

INCIDENT LOCATION:

NAME	PHONE
Peerless Display Corp. Bldg 29	
STREET: 681 Main St. (Industrial Park)	UTM VERT: . UTM HORIZ: .
CITY: Belleville COUNTY: 01701	STATE: N.J. ZIP CODE:

SOURCE OF SPILLED AND/OR DISCHARGED SUBSTANCE: Confirmed ☐ Alleged ☐ More Than 1 Source ☐

COMPANY NAME	PHONE
Essex-Passaic Realty Corp. (Belleville Industrial Park)	201-751-4192
CONTACT: MR. Ellis, MR. KRANZ — TITLE: OWNER, MANAGER	
STREET: 681 Main St.	DEP COMPANY NO.:
CITY: Belleville COUNTY: ESSEX	STATE: N.J. ZIP CODE:

SUSPECTED SPILLED AND/OR DISCHARGED SUBSTANCE: Confirmed ☐ Alleged ☐ More Than 2 Substances ☐

1. unk			SUBSTANCE NO.:
AMOUNT SPILLED: 17	UNITS: DRUM	A/P/E: A	S/L/G/M: M
2.			SUBSTANCE NO.:
AMOUNT SPILLED:	UNITS:	A/P/E:	S/L/G/M:

DATE OF INCIDENT	TIME (Military)	TEMP.	WEATHER	WIND (Dir. & Vel.)
09-14-84				

SPILL ORIGIN: Drum	CODE:
CAUSE: Abandd. & leak	CODE:
WATER BODY AFFECTED: unk.	CODE:
ASSOCIATED FIRE AND/OR HAZARDS:	

INCIDENT REFERRED TO:

AGENCY	PHONE
CONTACT	AGENCY CODE

PRIMARY D.W.M. INVESTIGATOR	FOLLOWUP
E20057	
NO FURTHER ACTION	DATE

COMMENTS:

Drums outside in weather, several rusting with holes (white crust material observed around holes) and about 7 drums contained an oil-like substance. Fire dept to issue letter 9/17/84 to owner to have drums properly removed & disposed of. J. Barkley of Salvage. H. Dept has inspected & will also follow up.

02

DWM-001

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT

D.W.M. ASSIGNED CASE NUMBER 84-09-14-2C		Page ___ of ___
DATE 09-24-84	TIME 1100	D.W.M. ID NO. E2216

9/24/84 @ 1100 hrs Called J. Farley, 201-675-1774, for update. He was not in left message for him to call.

03

ATTACHMENT P

07-50

(201) 465-0010
TWX: 710-995-4973

SYNFAX
The Toner Experts

SYNFAX MFG. INC. 441 AVENUE P ■ NEWARK, NJ 07105

June 4, 1982

Ms. Eileen Woznick
N.J. Dept. of Environmental Prot.
Solid Waste Administration
P.O. Box CN027
Trenton, New Jersey 08625

re: EPA-ID #'s

Dear Eileen:

I have enclosed a copy of my first letter to you date March 4, 1982, that I have not received a letter of response as I have requested and despritly need. Please give these two letters your top/first priority. (self addressed envelope is enclosed for your convience). I also need another EPA # confirmed by you as to there being reputable. As we spoke on the telephone on this date I mentioned the fact I have gotten verbal okay's but I need a written letter from Solid Waste Administration in Trenton to have on file at Synfax.

S & M Waste Oil, Pa. EPA ID No. PAD98055370
Route 739 Dingmans Ferry, Pa.

S & M Waste Oil Inc. EPA ID No. NJT350011946
P.O. Box 62
Ogdensburg, N.J. 07439

Synfax Mfg., Inc. EPA ID No. NJD064269400

I thank you and await your immediate reply confirming this information.

Sincerely,

SYNFAX MFG. INC.

Grace Pinto

Grace Pinto

P1

PRINT

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION
FIELD RECORD OF VIOLATION

EPA ID* NJD064269401

TION 12/11/79; 1/25/80 TIME AT SITE — a.m. p.m. from — a.m. p.m. to ID NUMBER HWEF07-SD

Sec A — PERSON IN VIOLATION

FULL BUSINESS NAME Syntax Mfg. Corp.

MAILING ADDRESS 681 (No.) Main St. (Street) Belleville (Post Office), NJ 07109 (Zip Code)

PHONE NUMBER (201) 759-0340

TYPE OF OWNERSHIP	NAME OF OWNER, PARTNERS, OFFICERS, OFFICIALS	TITLE
Individual	Michael L. Allen	Reg. Agent
Partnership	c/o Simon + Allen	
Corporation X	Gateway 1	
Municipal(type)	Newark, NJ 07102	

PERSONS INTERVIEWED/COMMENTS/PHONE # Neil Bloomberg (stat

Sec B — LOCATION OF VIOLATION

LOCATION ADDRESS 163 (No.) River Rd. (Street) Edgewater (Municipality) Bergen (County)

(Show details on reverse side) Book Plate ____ Lot 1,2,3 Block 95

OWNER Quanta Resources (Formally Edgewater Terminals) (Name, No. Street, City)

Sec C — DETAILS OF VIOLATION

CODE REFERENCE Chapter(s) 7 Section(s) 26 Paragraph(s) 7.4(a)

DETAILS Syntax had generated ID#76 waste and transported via RA-MAR transport to Quanta Resources (formally Edgewater Terminals). The wastes were Mixed Solvents which Mr. Bloomberg described as mineral spirits w/ Carbon Black.

used manifests # A-25214, #A25219.

* Syntax did not properly complete section 12 of Manifest # A-25214 and A-25219 in that they sent mixed solvents to a facility (Edgewater Terminals) not authorized to accept such waste.

REMARKS Syntax is currently shipping this waste to SRS via Kisko transport.

* use this language in the NOP

RECOMMENDED ACTION N.O.P. Penalty 7.4.a $250

REVIEWED BY [signature] 6-10-81 DATE

[signature] 6/10/81 DATE

[signature] 7/13/81 DATE

David F. Potts
INSPECTOR (SIGNATURE)

DAVID F. POTTS ENVIRONMENTAL SPECIALIST
PRINT NAME TITLE

7-14-81 pm

P2

CFO

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT

120 Rt. 156, Yardville, N.J. 08620

Dr. Marwan M. Sadat, P.E.
Director

LINO F. PEREIRA
DEPUTY DIRECTOR

Synfax
681 Main Street
Belleville, NJ 07109

RE: NOTICE OF VIOLATION
FAILURE TO ESTABLISH FINANCIAL ASSURANCE FOR CLOSURE AND POST-CLOSURE AND TO DEMONSTRATE FINANCIAL RESPONSIBILITY FOR CLAIMS - EPA ID #NJD064269400

Dear Sir:

Pursuant to the provisions of New Jersey Solid Waste Management Act, N.J.S.A. 13:1E-1, et seq., the Department of Environmental Protection has determined by examination of our files that you violated N.J.A.C. 7:26-9.10(e) and 9.11(c) in that you have failed to establish, and/or submit to the Department, financial assurance for closure and post-closure of the facility, and N.J.A.C. 7:26-9.13 in that you have failed to demonstrate financial responsibility for claims arising from the operations of your facility for sudden or non-sudden and accidental occurrences that cause injury to persons or property.

NOW, THEREFORE, YOU ARE HEREBY NOTIFIED that you facility shall submit the required documents within thirty (30) days of receipt of this Notice to: Frank Coolick, Bureau of Hazardous Waste Engineering, 32 East Hanover Street, Trenton, New Jersey 08625.

BE ON NOTICE that the Solid Waste Management Act establishes penalties of up to $25,000 per day for violation of the Department's hazardous waste management regulations. Your failure to correct the above violation may result in a penalty action by this Department up to the maximum allowed pursuant to law.

If you have any questions regarding this Notice, please call the Bureau of Compliance and Enforcement at (609) 292-0967. If you have any questions regarding the document to be submitted, please call the Bureau of Hazardous Waste Engineering at (609) 292-9880.

DATE: NOV 3 0 1983

David J. Shotwell, Chief
Bureau of Compliance and
Enforcement

lmc

P3

ATTACHMENT Q

RCRA INSPECTION TRACKING

COMPANY DATA

EPA ID NUMBER: No EPA ID# FACILITY NAME: Helios Industries Inc
MANDATORY (Y/N) N LAND BAN (Y/N) N FEE (Y/N) N FY/QUARTER: 91 / 2
CONTACT: Ross Hirtzel FACILITY PHONE: (201) 759-0200
COUNTY/MUNICIPAL CODE 07 01 FACILITY STREET:
CITY: Belleville FACILITY STATE NJ FACILITY ZIP: 07109
CORPORATE NAME: same CORPORATE STREET:
FACILITY CITY: FACILITY STATE FACILITY ZIP:
CONTACT: FILE NUMBER 07-01-22 Region code II

INITIAL INSPECTION (Y)

INSPECTION DATE: March 12, 1991 SITE VISIT (Y/N) Y
REGULATORY STATUS CODE 11 EVALUATION TYPE CODE 06 GRANT CODE 10
DATE NOV ISSUED N/A SCHEDULED COMPLIANCE DATE N/A
INSPECTOR/REVIEWER E. Davis JR. DATE ASSIGNED March 91 DATE REVIEWED
DATE VIOLATIONS REFERRED INCIDENT CASE NUMBER

FOLLOW-UP INSPECTION ( )

INSPECTION DATE: SITE VISIT (Y/N)
INITIAL INSPECTION DATE: VERIFIED COMPLIANCE DATE
EVALUATION TYPE CODE GRANT CODE
INSPECTOR/REVIEWER DATE REPORT REVIEWED

AREA OF EVALUATION

CLASS OF VIOLATION	GW	CLO	$$$	PTB	SCH	MNF	LDB	OTH
I*								
I						O		O
II						O		O
						O		O

(ENTER Z, X, O, H OR C IN THE APPROPRIATE BOX)

Z=UNDETERMINED OR UNDER INVESTIGATION

X=VIOLATION

H=HIGH PRIORITY VIOLATOR

C=FACILITY NOT IN COMPLIANCE WITH COMPLIANCE SCHEDULE IN CORRECTIVE ACTION COMPLIANCE SCHEDULE IN AN ORDER OR PERMIT

AREAS OF EVALUATION:
GW = Ground Water CLO = Closure $$$ = Financial responsibility PTB = Part B
SCH = Compliance Schedule MNF = Manifest LDB = Land ban OTH = other

COMMENTS:

Q1

Form ADM-012

(1)

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO File # 07-01-22 DATE March 19, 1991

FROM Eddie L. Davis Jr. thru Jeffrey A. Sterling

SUBJECT Helion Industries Inc.

Tuesday, March 12, 1991 this office conducted a Hazardous Waste Investigation at Helion Industries Inc. located at 681 Main St. in Belleville, N.J. This investigation was conducted in response to a hazardous waste referral submitted to this office from DEQ. Whereby Helion was observed storing hazardous material drums on site.

During this 3-12-91 investigation, Helion was represented by Mr. G. Ross Hirtzel - Vice President - Operations. (201) 759-0200. Hirtzel informed me that Helion is in the business of making chemicals for the graphic arts industries. Helion purchases raw material, some of which are hazardous, and mixes them with water to produce Developers and Fixers. The batch mixing is done in 3-2000 gal fiberglass mixing tanks; 1-1000 gal Fiberglass mixing tank; 1-1000 gal Stainless Steel mixing tank, 1-500 gal polyethylene mixing tank, 1-400 gal Stainless Steel mixing tank, 1-300 gal Stainless steel mixing tank. After the developers and mixers are made they are pumped into 2-500 gal Holding tanks and 1-200 gal holding tank until the product is needed. The products (Developers and Fixers) are then line fed into bottles and pails and gallon containers for sale and distribution.

Q2

At the end of each batch, the mixing tanks are cleaned by rinsing with water. The rinse water is then discharged to the sanitary sewer. Helion has authorization to discharge wash water to the sanitary sewer thru Bassic Valley Sewerage Commission. Helion discharges approximately 2000-gallons of rinse water to the sanitary sewer per week. There is no ~~other~~ hazardous waste accomulation on site, and no hazardous waste violations were observed. No enforcement action require at this facility from the DHWM point of view. All violations issued to the facility were issued by DEQ where by the facility failed to obtain batch permits for batch mixing and material storage and venting see attachment.

Q3

Form ADM-015
11/82

State of New Jersey
Department of Environmental Protection

REFERRAL FORM Date Jan. 28, 1991

TO	FROM
Mr. YACOUB	NEHAL G. PATEL
DHWM	DEQ
	TELEPHONE EXT. 3943

For Your ☒ ACTION ☐ APPROVAL ☒ INFORMATION ☐ REVIEW
☐ COMMENTS ☐ SIGNATURE ☒ FILE ☐ _____

Attached is a copy of investigation report on HELION INDUSTRIES, INC. storing AROMATIC NAPTHA, MINERAL SPIRITS, ACETIC ACID ETC.

Jeff

This Came from D.E.Q
please let one of your staff
investigate (maybe fire
program inspector)
thanx.

Q4

HELION INDUSTRIES, INC.
681 Main Street
Belleville, N.J. 07109
Tel: (201) 759-0200

CONTACTS: Charles Bieber, Vice President
G. Ross Hirtzel, V. P. - Operations

MRO CONTACT: Nehal G. Patel, Assistant Env. Engineer
Tel: (201) 669-3935 Fax: (201) 669-3942

Time at Facility: 1010 to 1120 hrs. Date: 01/18/91

Background:

Helion Industries, Inc. is in the business of manufacturing photochemicals, activators, rapid access etc., since 1970. The subject Company moved to the above location in 1975-1976.

Equipment Inventory:

Filling Room :

2 500 gal. tanks
1 200 gal. tanks

Batch Making Department :

3 2000 gal. Fiberglass mixing tanks
1 1000 gal. Fiberglass mixing tank
1 1000 gal. S.S. mixing tank
1 500 gal. Polyethylene mixing tank
1 400 gal. S.S. mixing tank
1 300 gal. S.S. mixing tank

Company stores 55 gal. drums of Aromatic Naptha and Mineral spirits in this room.

These tanks and drums vent through 2 room exhaust fans, installed without permits. None of the sources were operating during inspection.
According to Mr.Hirtzel and Mr. Bieber, all the tanks process material in excess of 50 lb/hr.
Company was informed about the violation.

Powder Mixing Department :

1 250 lbs. capacity Double-cone Mixer venting indirectly to atmosphere, installed without a permit.
During inspection company was mixing 105 lbs. of Fixer powder without a certificate to operate.
Company was informed about the violation.

...2

Q5

Helion Indus., contd.

Dry and Bulk Storage Room :

1 5500 gal. Fiberglass tank storing Potassium Sulphite
1 3000 gal. polyethylene tank storing Aluminum Sulphite
1 3000 gal. polyethylene tank, Empty
1 3000 gal. polyethylene tank, storing Ammonium Thiocynate
2 3000 gal. polyethylene tank, storing 80% Acetic Acid venting indirectly through one exhaust stack to atmosphere.

Company no longer uses/stores Ethylene Glycol.

Comapny was informed to file permit application for the Acetic Acid tanks and about the violation.

Summary:

Company was informed about all the violations and sub. 8 was handed-out to Mr. Hirtzel. Mr. Hirtzel was also informed about Batch Permits and to contact Richard Langbein in NSR. I personally contacted Richard after coming back to the office and informed him to call the company and send appropriate permit application forms.

Q6

Let's protect our earth

Halun
Rec'd 7/3/89
1st Notification

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, N.J. 08625-0027

Anthony J. McMahon
Acting Director

(609) 292-5383
Fax # (609) 292-1074

~~SA~~
07-01-22

MEMORANDUM

June 21, 1989

TO: Yacoub E. Yacoub
Department of Hazardous Waste Management

FROM: Stanley Delikat, Chief
Bureau of Emergency Response

SUBJECT: Bureau of Emergency Response Referral
Case No. 89-06-01-0910 (0701)

Please find enclosed a referral from the Bureau of Emergency Response for enforcement and/or other followup. The contact person is L. Jones who can be reached at (201) 669-3955, for any additional information you may require. At your convenience, please sign and return the enclosed Acknowledgement of Receipt to indicate same.

cc: CHIEF CHARLIE KRAUSS

New Jersey Department of Environmental Protection
Division of Environmental Quality
Bureau of Emergency Response
Region I

INVESTIGATION

Case #: 89-06-01-0910 **File #:** -

Investigator: L.Jones **Date:** 06-08-89 **Time Arrived:** 1030
Time Departed: 1130

Location: Helion **Block:** **Lot:**
Address: 481 Main Street, Belleville, Essex Co.
Location Phone #: 201 759-0200

Responsible Party: Helion
Mailing Address: 481 Main Street, Belleville, Essex Co.

Health Dept. Rep: **Phone #:**
Origin of Complaint: Capt. Aughenbaugh BFD **Phone #:** 450-5577
Nature of Complaint: Illegal dumping of acids into storm drain.

Findings: Chief Delikat and I arrived on scene at 1030 hours and met with Capt. Aughenbaugh of the Belleville Fire Dept. We toured the facility where the Capt. had noticed many pollution violations, and brought them to our attention. Purpose of this investigation, was to determine if there was intentional illegal dumping occurring at the site. We observed the completion of a delivery of Ammonium Thiosulfate to the facility. The piping system to the storage tanks was in close proximity to a storm water drain. Capt. Aughenbaugh had previously noted this storm drain to be full of liquid, during a previous inspection. An employee of the company advised him the material was acid. During our investigation we noted the storm drain was empty with a small amount of liquid at the bottom. It should be noted that it rained the previous evening.

During the remaining tour, we noted hazardous material storage tanks in Helion that were leaking from pipe seams. The leaks were discharging to the ground, with the possibility of access to near by storm water drains. The remaining inspection of the building found many material loading points where there may be the possibility of spills to occur, if additional precautions are not taken. The areas were not readily accessible or visible.

We proceeded to tour the entire facility. We observed many above ground storage tanks on the property that were empty, and appeared to have been left open at the ends. At the conclusion of our investigation, we debriefed with Capt. Aughenbaugh and advised him the case would be referred to OIEM-SI, for follow up investigations.

Q8

Conclusions: Region I responded to a report of illegal discharges of acids into storm water drains at the above referenced location. Our investigation found many possible point sources of pollution, some of which were confirmed and some that are suspect. Upon debriefing with local officials, the case is being referred to DHWM-M for additional investigation.

Recommendations:

1. Case is referred for no further action by BER I at this time.
2. Case is referred to DHWM-M for additional investigation.
3. Case is referred to DFG for follow up.
4. Case if referred too DWR-M for follow up investigation.

Investigator — 6/12/89 Date

Supervisor — 6/12/89 Date

Q9

ATTACHMENT R

1992-1993 EDITION

Corfacts

DIRECTORY OF MANUFACTURING

Independence Plating
107 Alabama Ave., Paterson, NJ, 07503
(201) 523-1776 FAX: (201) 279-1274
Emp: D *Rev:* B *Founded:* 1952
Cnty: Passaic *SIC:* 3471
Company provides electroplating services for aerospace and computer parts.
President ..... Ron Knigge
Office Mgr. ..... Barbara Altieri

Ideal Plating & Polishing Co.
(Independence Plating, Paterson, NJ)
681 Main St., P.O. Box 100, Belleville, NJ, 07109
(201) 759-5559 FAX: (201) 759-0277
Emp: C *Rev:* B *Founded:* 1940
Cnty: Essex *SIC:* 3479
Company provides electroplating services.
President ..... Ronald Kingge
Plant Mgr. ..... Derick Thompson

• NEW JERSEY EDITION

R

ATTACHMENT S

REGIONAL HEALTH COMMISSION
377 SO. HARRISON ST. - SUITE 1 F
EAST ORANGE, N. J. 07018
(201) 675-1774

IDEAL PLATING and POLISHING COMPANY, INC.

October 3, 1979 C & D ~~required~~ received 8.3. A & B

6 permits required for the following:

1) OBLIQUE BARREL LINE

15 Tanks - 100 to 120 gal. capacity,
Indirect vent to atmosphere

2) BARREL TIN LINE

36 Tanks - 90 to 250 gal. capacity, chiller,
Indirect vent to atmosphere

3) GOLD and SIEVER LINE

47 Tanks - 90 to 250 gal. capacity, chiller, 120 gal. pickling tank with fan and duct, direct and indirect vent to atmosphere

4) RACK TIN LINE

27 Tanks - 90 to 350 gal. capacity, pickling tank with hood and fan, 1-100-gal. perchloro-ethylene degreaser with condenser, 1 vapor degreaser 200 to 300 gal. capacity, also perchloroeghylene, direct and indirect vent to atmosphere

5) LABORATORY HOOD

Direct vent to atmosphere

6) BUILDING X- FANS

8 36" diameter Fans, 6 installed, 2 spare, direct vent to atmosphere.

S

16669

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, P. O. BOX 2807, TRENTON, N. J. 08625

ORDER

To: Ideal Plating and Polishing Company
Norman A. Cohen, Registered Agent
214 Smith Street
Perth Amboy, New Jersey 08861

Re: N.J.A.C. 7:27-8.3(a) & (b)
Plant Identification No. Not listed
Violation Occured on Premises Known As:
681 Main Street, Lot 6, Block 56,
Belleville Town, Essex County,
New Jersey

WHEREAS, the State Department of Environmental Protection has determined by investigation(s) or inspection(s) made pursuant to the Provisions of the New Jersey Air Pollution Control Act that on October 3, 1979 you did violate Title 7, Chapter 27, Subchapter 8 Section 8.3(a)&(b) of the New Jersey Administrative Code in that:

The investigation(s) disclose(a) that equipment and control apparatus (see attachment) were constructed, installed or altered on the premises identified above without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department.

and

(b) that equipment and control apparatus (see attachment) were used or caused to be used on the premises identified above without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department.

NOW, THEREFORE, YOU ARE HEREBY ORDERED, to cease violation of said Subchapter on the premises owned, leased, operated or maintained by you on or before February 16, 1980

Dated: December 17, 1979

Edward J. Londres
Assistant Chief
Bureau of Air Pollution Control

cc: Local District Field Office Belleville Town
Metro
Suburban Air Pollution Commission

CERTIFIED MAIL

VAP001
Jul. 76

FIELD OFFICE - ENFORCEMENT FILE

DATED December

IDEAL PLATING AND POLISHING COMPANY, INC.

October 3, 1979 C & D Requested 8.3(a)&(b)

6 permits required for the following:

1. OBLIQUE BARREL LINE

   15 Tanks - 100 to 120 gal. capacity,
   Indirect vent to atmosphere

2. BARREL TIN LINE

   36 Tanks - 90 to 250 gal. capacity, chiller,
   Indirect vent to atmosphere

3. GOLD AND SILVER LINE

   47 Tanks - 90 to 250 gal. capacity, chiller, 120 gal. pickling tank with fan and duct, direct and indirect vent to atmosphere

4. RACK TIN LINE

   27 Tanks - 90 to 350 gal. capacity, pickling tank with hood and fan, 1-100-gal. perchloroethylene degreaser with condenser, 1 vapor degreaser 200 to 300 gal. capacity, also perchloroeghylene, direct and indirect vent to atmosphere

5. LABORATORY HOOD

   Direct vent to atmosphere

6. BUILDING X-FANS

   8 36" diameter Fans, 6 installed, 2 spare direct vent to atmosphere

52

Form DEQ-012

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY AIR POLLUTION FIELD RECORD OF VIOL.

DATE 10/3/79 TIME AT SITE 10:00 a.m. p.m. from 11:00 a.m. p.m. to

STATE HEALTH DISTRICT METRO COUNTY ESS/EX

PERSON IN VIOLATION

Sec. A

FULL BUSINESS NAME IDEAL PLATING AND POLISHING CO. INC.

MAILING ADDRESS P.O. BOX 100, 681 MAIN ST. BELLEVILLE, N.J. 07109
No. Street Post Office Zip Code

TYPE OF OWNERSHIP:

	NAME OF OWNER, PARTNERS, OFFICERS, OFFICIALS	TITLE
INDIVIDUAL	RONALD F. KNIGGE	PRESIDENT
PARTNERSHIP		
CORPORATION ✓		
MUNICIPAL (type)		

PERSONS INTERVIEWED MR KNIGGE

PERSON AUTHORIZED TO RECEIVE PROCESSES MR KNIGGE
Name

MAILING ADDRESS SAME
No. Street Post Office Zip Code

REMARKS:

LOCATION OF VIOLATION

Sec. B

LOCATION ADDRESS 681 MAIN ST. BELLEVILLE, N.J. 07109
No. Street Municipality

(Show details on reverse side) Book Plate — Lot 6 Block 56

Premises occupied as: Owner ✓ Lessee Tenant

Owner BELLEVILLE LOAN/SAVINGS CO-OP 705-757 MAIN ST. BELLEVILLE, NJ
Name No. Street City

DETAILS OF VIOLATION

Sec. C

CODE REFERENCE Chapter(s) 7:27 - 8 Section(s) 8.3 Paragraph(s) A & B

DETAILS DID INSTALL AND OPERATE ON OR ABOUT MARCH 1979 ELECTRO-PLATING PROCESS EQUIPMENT (SEE ATTACHED LIST) WITHOUT THE NECESSARY PERMITS

REMARKS NONE

RECOMMENDED ACTION C+D

W. F. Beck
Signed
10/4/79
Date

Signed
DIRECTOR
Title

(OVER)

SUBURBAN REGIONAL HEALTH COMMISSION
377 SO. HARRISON ST. - SUITE 1-F
EAST ORANGE, N. J. 07018
(201) 675-1774

SUBURBAN REGIONAL HEALTH COMMISSION
377 SO. HARRISON ST. - SUITE 1-F
EAST ORANGE, N. J. 07018
(201) 675-1774

ATTACHMENT T

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

TO: New Jersey Department of Environmental Protection
Bureau of Air Pollution Control
CN- 027
Trenton, New Jersey 08625

Read Instructions Before Completing Application

SECTION A

1. Full Business Name: Ideal Plating & Polishing Co
2. Mailing Address: PO Box 100, 681 Main St (No.) (Street) Belleville (City) NJ (State) 07109 (Zip Code)
3. Division and/or Plant Name: Same as #1
4. Plant Location: Same as #2 (No.) (Street) (Municipality) (County)
5. Location of equipment on premises (Bldg., Dept., area, etc.): Barrel Room
6. Nature of business: Precious Metal Plating
7. Estimated starting date of construction: Installed
8. Date equipment to be put in use: Immediately
9. Plant Contact: Ronald F Knigge (Name (Print or type)) Pres (Title) 201 759 5559 (Telephone No.)

SECTION B

REASON FOR APPLICATION (CHECK ONE)

- ☒ New Equipment without Control Apparatus
- ☐ New Equipment with Control Apparatus
- ☐ New Control Apparatus on Existing Equipment
- ☐ Five Year Renewal of Certificate No. (s)
- ☐ Other (Explain)
- ☐ Modification to Existing Equipment
- ☐ Modification to Existing Control Apparatus
- ☐ Painting Tank White

SECTION C

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack (s): 1, 2, 3, 4
2. Previous Certificate Numbers (if any)
3. a. Number of Sources Venting to this Stack: 1 (Complete a separate VEM-004 for each source)
   b. Number of Stacks Venting Source Operation (s): 4
4. Distance to the nearest Property Line (ft.): 15 ft
5. Stack Diameter (inches): 36 in fans
6. Discharge Height Above Ground (ft.): 8 ft (3) & 30 ft (1)
7. Exit Temperature of Stack Gases (°F): 700 F
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.): 45,000 (11,250 ea)
9. Discharge Direction (3) ☒ Horizontal (1) ☒ Up ☐ Down

The information supplied on applications VEM-003 and VEM-004, including the data in supplements, is to the best of my knowledge true and correct.

Signature: [signature] Date: 1/27/x

Ronald F Knigge (Name (Print or type)) Pres (Title)

This application will not be processed unless proper fee is submitted.

FOR ASSISTANCE CALL (609) 292-6716

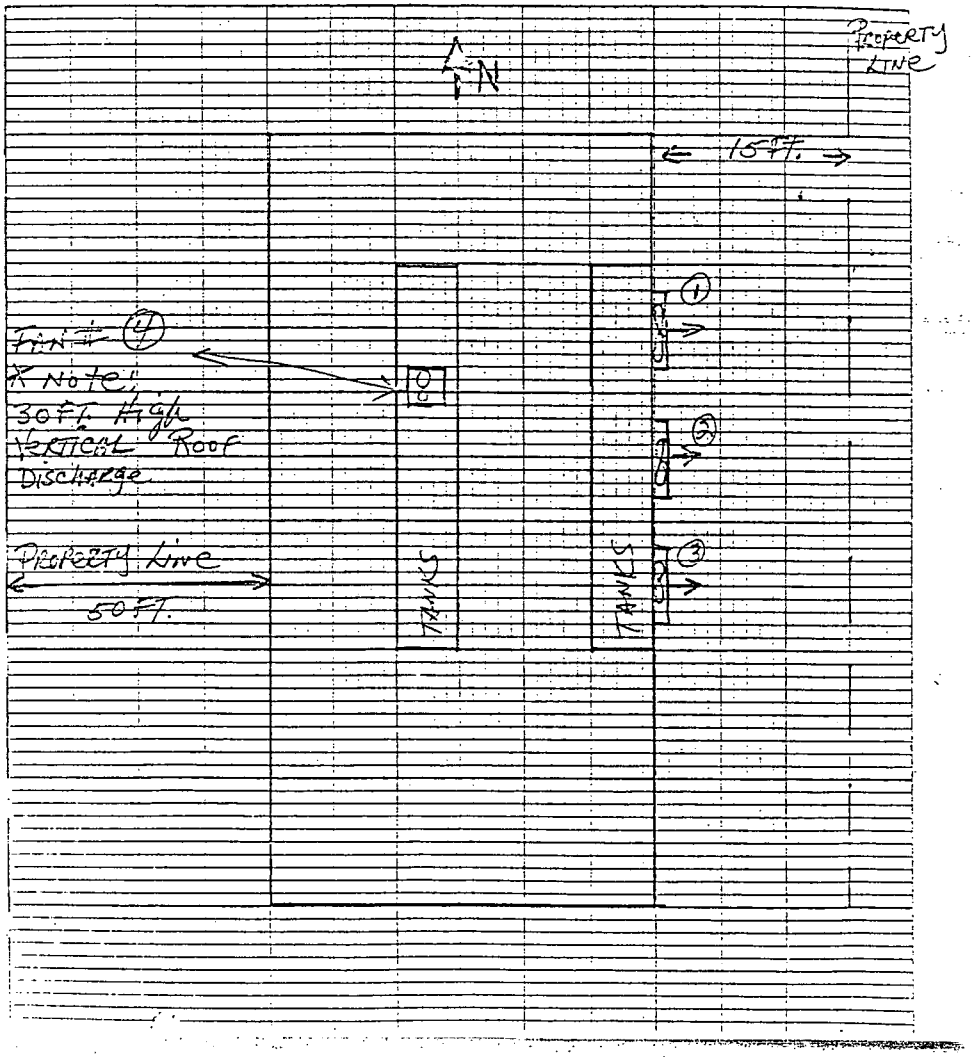
FOR DEPARTMENT USE ONLY

[ ] - [ ] - 0 0 0 46978

(over)

SECTION D DIAGRAM INSTRUCTIONS - A diagram must be included showing the configuration of all stacks, control apparatus and sources related to this application. NOTE: In cases of multiple stacks, include the following information for each stack: (1) distance to nearest property line, (2) stack diameters, (3) stack height above ground, (4) exit temperature (°F) of stack gases, (5) volume rate of gases (ACFM) discharged at stack conditions, (6) the location and type of control apparatus, (7) direction of flows, and (8) maximum stack emissions.

Diagram



NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions And Source Data Form
(Complete this form for each source and submit with application Form VEM-003)

SECTION E

SOURCE INFORMATION

1. Source Description: Barrel Room - Plating Tanks

2. Operating Schedule: 8 Hours/Day; 1600 Hours/Year; 4 1 79 Operation Starting Date

3. % Annual Production Throughput By Quarter: 25 Jan.-Mar.; 25 Apr.-June; 25 July-Sept.; 25 Oct.-Dec.

4. Volume Of Gas Discharged From This Source (ACFM): 45,000 Source Discharge Temperature (°F): 70° F

SECTION F

CONTROL APPARATUS ON SOURCE

	Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary			
Secondary			
Tertiary			

SECTION G

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
Acid Vapors	Less than .578 lb/hr		Calculation

TO INSURE PROPER COORDINATION BETWEEN VEM-003 AND VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Ideal Plating & Polishing Co

Company Designation of Stack (s): 1, 2, 3, 4

(over)

SECTION H

A. MANUFACTURING AND MATERIALS HANDLING

1. Process Description: Gold & silver plating

2. Total Amount Materials Processed: ☑ Batch 60 lb/batch, 1/2 hr/batch; ☐ Continuous ____ lb/hr

3. Raw Materials

Raw Materials	% By Wt.	Raw Materials	% By Wt.
Water	99%	Silver cyanide	.1
Potassium Gold Cyanide	.1	Gold	.01
Citriz Acid	.1	Silver	.01
Copper Cyanide	.1	Tin Sulfate	.1

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR)

2. Type Heat Exchange: ☐ Direct ☐ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:		
b. Heating Value (Btu/lb):		
4. Method of Firing:		
5. % Sulfur in Fuel (Dry):		
6. % Ash Content of Fuel (Dry):		
7. Amount Burned/Yr.		

Units: Solid Fuel (Tons) Liquid Fuel (10^3 Gal.) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION

1. Type of Unit
2. Constituents of Waste (s)
3. Waste Code ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6
4. Amount Burned (lbs./hr.) Type of Auxil. Fuel (If Any)

D. STORAGE FACILITY

1. Tank Contents
2. Type of Tank or Bin Height or Length (Ft.)
3. Capacity (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.)

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) Storage Temp. If Not Ambient (°F)
5. Filling Rate (Gal/Min) Annual Throughput (10^3 Gal/Yr)
6. Method of Fill ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank ☐ White ☐ Other Exposed to Suns Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)
   Type ____, Thickness (Inches) ____ Thermal Conductivity (BTU/HR/FT^2/°F)

For Department Use Only

T2

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

TO: New Jersey Department of Environmental Protection
Bureau of Air Pollution Control
CN- 027
Trenton, New Jersey 08625

Read Instructions Before Completing Application

SECTION A

1. Full Business Name: Ideal Plating & Polishing Co
2. Mailing Address: PO Box 100, 681 (No.) Main St (Street) Belleville (City) NJ (State) 07109 (Zip Code)
3. Division and/or Plant Name: Same as #1
4. Plant Location: Same as #2 (No.) (Street) (Municipality) (County)
5. Location of equipment on premises((Bldg., Dept., area, etc.) Rack Room
6. Nature of business: Precious metal plating
7. Estimated starting date of construction: Installed
8. Date equipment to be put in use: Immediately
9. Plant Contact: Ronald F Knigge (Name (Print or type)) Pres (Title) 201 759 5559 (Telephone No.)

SECTION B

REASON FOR APPLICATION (CHECK ONE)

- ☒ New Equipment without Control Apparatus
- ☐ New Equipment with Control Apparatus
- ☐ New Control Apparatus on Existing Equipment
- ☐ Five Year Renewal of Certificate No. (s)
- ☐ Other (Explain)
- ☐ Modification to Existing Equipment
- ☐ Modification to Existing Control Apparatus
- ☐ Painting Tank White

SECTION C

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack (s): ~~5, 6, 7~~
2. Previous Certificate Numbers (if any)
3. a. Number of Sources Venting to this Stack: 1 (Complete a separate VEM-004 for each source)
   b. Number of Stacks Venting Source Operation (s): 3
4. Distance to the nearest Property Line (ft.): 15 ft #1 & 50 ft #2
5. Stack Diameter (inches): 36" in fans
6. Discharge Height Above Ground (ft.): 8 ft
7. Exit Temperature of Stack Gases (°F): 70° F
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.): 33,750 (11,250 ea)
9. Discharge Direction: ☒ Horizontal ☐ Up ☐ Down

The information supplied on applications VEM-003 and VEM-004, including the data in supplements, is to the best of my knowledge true and correct.

Ronald F Knigge (Signature) 6/25/86 (Date)

Ronald F Knigge (Name (Print or type)) Pres (Title)

This application will not be processed unless proper fee is submitted.

FOR ASSISTANCE CALL (609) 292-6716

FOR DEPARTMENT USE ONLY

[ ] - [ ] - [ ] [ ] [ ] [ ] [ ] [ ] [ ]

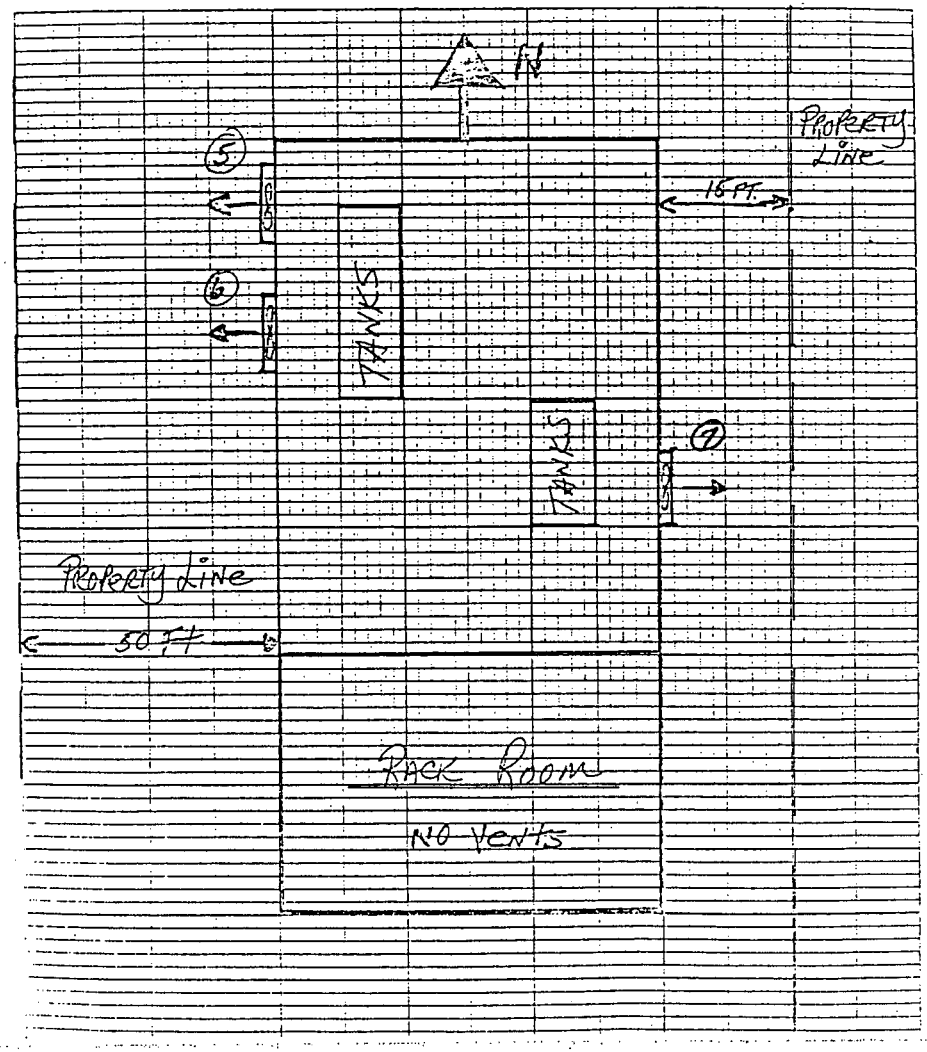
(over)

T3

Side 2

SECTION D DIAGRAM INSTRUCTIONS - A diagram must be included showing the configuration of all stacks, control apparatus and sources related to this application. NOTE: In cases of multiple stacks, include the following information for each stack: (1) distance to nearest property line, (2) stack diameters, (3) stack height above ground, (4) exit temperature (° F) of stack gases, (5) volume rate of gases (ACFM) discharged at stack conditions, (6) the location and type of control apparatus, (7) direction of flows, and (8) maximum stack emissions.

Diagram



NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions And Source Data Form
(Complete this form for each source and submit with application Form VEM-003)

Side 2

SECTION E — SOURCE INFORMATION

1. Source Description: Rack Room - Plating Tanks
2. Operating Schedule: 8 Hours/Day; 1600 Hours/Year; 4 1 79 Operation Starting Date
3. % Annual Production Throughput By Quarter: Jan.-Mar. ____ Apr.-June ____ July-Sept. ____ Oct.-Dec. ____
4. Volume Of Gas Discharged From This Source (ACFM): 33,750 Source Discharge Temperature (°F): 70° F

SECTION F — CONTROL APPARATUS ON SOURCE

	Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary			
Secondary			
Tertiary			

SECTION G — AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
NaOH Mist	Less than .38	16/hr	Calculation

TO INSURE PROPER COORDINATION BETWEEN VEM-003 AND VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Ideal Plating & Polishing Co

Company Designation of Stack (s): 5, 6, 7

(over)

SECTION H

A. MANUFACTURING AND MATERIALS HANDLING

1. Process Description: Plating Rack Line
2. Total Amount Materials Processed: ☒ Batch 60 lb/batch, 1/2 hr/batch; ☐ Continuous ____ lb/hr
3. Raw Materials

Raw Materials	% By Wt.	Raw Materials	% By Wt.
Caustic Cyanide Solution	>99		
Tin Sulfate	.1		
Copper Cyanide	.1		
Lead	.1		

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR)
2. Type Heat Exchange ☐ Direct ☐ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:		
b. Heating Value (Btu/lb):		
4. Method of Firing:		
5. % Sulfur in Fuel (Dry):		
6. % Ash Content of Fuel (Dry):		
7. Amount Burned/Yr.		

Units: Solid Fuel (Tons) Liquid Fuel (10^3 Gal.) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION

1. Type of Unit
2. Constituents of Waste (s)
3. Waste Code ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6
4. Amount Burned (lbs./hr.) Type of Auxil. Fuel (If Any)

D. STORAGE FACILITY

1. Tank Contents
2. Type of Tank or Bin Height or Length (Ft.)
3. Capacity (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.)

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) Storage Temp. If Not Ambient (°F)
5. Filling Rate (Gal/Min) Annual Throughput (10^3 Gal/Yr)
6. Method of Fill ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank ☐ White ☐ Other Exposed to Suns Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)
   Type ____, Thickness (Inches) ____ Thermal Conductivity (BTU/HR/FT^2/°F)

For Department Use Only

ATTACHMENT U

6/83

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PROGRAM
BUREAU OF ENGINEERING AND TECHNOLOGY

All Correspondence must indicate your DEP PLANT ID NUMBER

Permit/Certificate Number 046977 DEP PLANT ID 05980

(Mailing Address)

IDEAL PLATING AND POLISHING COMPANY
P.O. BOX 100
BELLEVILLE NJ 07109

(Plant Location)

681 MAIN ST.
BELLEVILLE

Applicant's Designation of Equipment EXHAUST FANS 5,6,7
N.J. Stack No. 001 No. of Stacks 003 No. of Sources 01
Original Approval 06/25/80 Effective 06/25/80 Expiration 06/25/90

CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR RENEWAL)

THIS (5 YEAR RENEWAL) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A.26:2C-9.2). THE POSSESSION OF THIS DOCUMENT DOES NOT RELIEVE YOU FROM THE OBLIGATION OF COMPLYING WITH ALL OTHER PROVISIONS OF TITLE 7, CHAPTER 27, OF THE NEW JERSEY ADMINISTRATIVE CODE.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE).

THIS DOCUMENT MUST BE READILY AVAILABLE FOR INSPECTION AT THE PLANT.

N.J. Department of Environmental Protection
Division of Environmental Quality
CN-027
Trenton, New Jersey 08625

Approved by: _____
Supervisor
New Source Review Section

SUBURBAN REGIONAL HEALTH COMMISSION 02/27/85-12

6/83

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PROGRAM
BUREAU OF ENGINEERING AND TECHNOLOGY

All Correspondence must indicate your DEP PLANT ID NUMBER

Permit/Certificate Number 046977 DEP PLANT ID 05980

(Mailing Address)

IDEAL PLATING AND POLISHING COMPANY
P.O. BOX 100
BELLEVILLE NJ 07109

(Plant Location)

681 MAIN ST.
BELLEVILLE

Applicant's Designation of Equipment EXHAUST FANS 5,6,7
N.J. Stack No. 001 No. of Stacks 003 No. of Sources 01
Original Approval 06/25/80 Effective 06/25/80 Expiration 06/25/85

CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR)

THIS PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A.26:2C-9.2). THE POSSESSION OF THIS DOCUMENT DOES NOT RELIEVE YOU FROM THE OBLIGATION OF COMPLYING WITH ALL OTHER PROVISIONS OF TITLE 7, CHAPTER 27, OF THE NEW JERSEY ADMINISTRATIVE CODE.

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THIS DOCUMENT MUST BE READILY AVAILABLE FOR INSPECTION AT THE PLANT.

N.J. Department of Environmental Protection
Division of Environmental Quality
CN-027
Trenton, New Jersey 08625

Approved by: _____
Supervisor
New Source Review Section

SUBURBAN REGIONAL HEALTH COMMISSION 02/10/84-04

6/83

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PROGRAM
BUREAU OF ENGINEERING AND TECHNOLOGY

All Correspondence must indicate your DEP PLANT ID NUMBER

Permit/Certificate Number 046978 DEP PLANT ID 05980

(Mailing Address)

IDEAL PLATING AND POLISHING COMPANY
P.O. BOX 100
BELLEVILLE NJ 07109

(Plant Location)

681 MAIN ST.
BELLEVILLE

Applicant's Designation of Equipment EXHAUST FANS 1,2,3,4
N.J. Stack No. 002 No. of Stacks 004 No. of Sources 01
Original Approval 06/25/80 Effective 06/25/80 Expiration 06/25/90

CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR RENEWAL)

THIS (5 YEAR RENEWAL) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A.26:2C-9.2). THE POSSESSION OF THIS DOCUMENT DOES NOT RELIEVE YOU FROM THE OBLIGATION OF COMPLYING WITH ALL OTHER PROVISIONS OF TITLE 7, CHAPTER 27, OF THE NEW JERSEY ADMINISTRATIVE CODE.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE).

THIS DOCUMENT MUST BE READILY AVAILABLE FOR INSPECTION AT THE PLANT.

N.J. Department of Environmental Protection
Division of Environmental Quality
CN-027
Trenton, New Jersey 08625

Approved by: _____
Supervisor
New Source Review Section

SUBURBAN REGIONAL HEALTH COMMISSION 02/27/85-1

6/83

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PROGRAM
BUREAU OF ENGINEERING AND TECHNOLOGY

All Correspondence must indicate your DEP PLANT ID NUMBER

Permit/Certificate Number 046978 DEP PLANT ID 05980

(Mailing Address)

IDEAL PLATING AND POLISHING COMPANY
P.O. BOX 100
BELLEVILLE NJ 07109

(Plant Location)

681 MAIN ST.
BELLEVILLE

Applicant's Designation of Equipment EXHAUST FANS 1,2,3,4
N.J. Stack No. 002 No. of Stacks 004 No. of Sources 01
Original Approval 06/25/80 Effective 06/25/80 Expiration 06/25/85

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YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE).

THIS DOCUMENT MUST BE READILY AVAILABLE FOR INSPECTION AT THE PLANT.

N.J. Department of Environmental Protection
Division of Environmental Quality
CN-027
Trenton, New Jersey 08625

Approved by: _____
Supervisor
New Source Review Section

SUBURBAN REGIONAL HEALTH COMMISSION 02/10/84-04

U2

ATTACHMENT V

Let's protect our earth

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, NJ 08625

ORDER

TO: Ideal Plating & Polishing Co.
P. O. Box 100
681 Main Street
Belleville, New Jersey 07104
Ronald F. Knigge, President

Contact/Phone: 201-759-5559
Violation Occurred On
Premises Known As:

681 Main Street, Belleville,
Lot 6, Block 56, Essex County,
New Jersey, ID #05980

The New Jersey Department of Environmental Protection has determined by investigation(s) made pursuant to the provisions of N.J.S.A. 26:2C-1 that on January 10, 1984 you did violate the New Jersey Administrative Code, Title 7, Chapter 27, Air Pollution Control, Subchapter and Section(s) as follows:

17.3(a) - The investigation disclosed TVOS (Perchloroethylene), listed in Table 1, being emitted from a source operation, storage tank or transfer operation into the outdoor atmosphere without the equipment and/or operation registered with the Department.

YOU ARE HEREBY ORDERED, to cease violation of said Subchapter on the premises owned, leased, operated, or maintained by you on or before March 26, 1984.

Under the provisions of N.J.S.A. 26:2C-14.1 you are entitled to an administrative hearing if aggrieved by this Order. If aggrieved, you must make written application to the Department within 15 days from receipt of this Order.

Should you have any questions, contact Metro Field Office
201-648-2560
Refer to Log #21547

Dated: January 26, 1984

Thomas A. Pluta
Thomas A. Pluta, Assistant Director
Enforcement Branch

Program: Metro Field Office

CERTIFIED MAIL

Let's protect our earth

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, NJ 08625

ORDER

TO: Ideal Plating & Polishing Co.
P. O. Box 100
681 Main Street
Belleville, New Jersey 07104
Ronald F. Knigge, President

Contact/Phone: 201-759-5559
Violation Occurred On
Premises Known As:

681 Main Street, Belleville,
Lot 6, Block 56, Essex County,
New Jersey, ID #05980

The New Jersey Department of Environmental Protection has determined by investigation(s) made pursuant to the provisions of N.J.S.A. 26:2C-1 that on January 10, 1984 you did violate the New Jersey Administrative Code, Title 7, Chapter 27, Air Pollution Control, Subchapter and Section(s) as follows:

8.3(a) - The investigation disclosed an open top vapor degreaser containing perchloroethylene was constructed, installed or altered on the premises identified above without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department.

8.3(b) - The investigation disclosed an open top vapor degreaser containing perchloroethylene was used or caused to be used on the premises identified above without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department.

YOU ARE HEREBY ORDERED, to cease violation of said Subchapter on the premises owned, leased, operated, or maintained by you on or before March 26, 1984.

Under the provisions of N.J.S.A. 26:2C-14.1 you are entitled to an administrative hearing if aggrieved by this Order. If aggrieved, you must make written application to the Department within 15 days from receipt of this Order.

Should you have any questions, contact Metro Field Office
201-648-2560
Refer to Log #21546

Dated: January 26, 1984

Thomas A. Pluta
Thomas A. Pluta, Assistant Director
Enforcement Branch

Program: Metro Field Office

CERTIFIED MAIL

Form DEQ-062
12/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

FIELD INVESTIGATION ASSIGNMENT REPORT

Legal
Cl#7 3 PI)

TYPE OF INVESTIGATION REQUIRED	INSPECTOR ASSIGNED (Code No.)	DATE ASSIGNED	REQUIRED COMPLETION DATE	ACTUAL COMPLETION DATE	COUNTY	NO.	SUBCHAPTER	UNITS/	INSPECTOR'S INITIALS
1. ☐ COMPLAINT 2. ☐ ORDER/NOP COMPLIANCE 3. ☐ APEDS 4. ☒ OTHER	013	JAN 84		1/10/84	ESSEX	3	8, 17	CO	

1. COMPLAINT Date Rec'd. _____ Time _____ Tel. No. _____ Name _____ Address _____
Name and Address of Alleged Violator _____ Nature of Violation _____ Recorded by _____
Investigation Results ☐ Verified ☐ Not Verified Date _____ Time _____ Recommendations _____ Observation _____ (continued on attached ☐ yes ☐ no)

2. ORDER/NOP COMPLIANCE Company _____ NJAC 7:27 _____ Comments _____ Location _____ Order, NOP Dated _____ Compliance ☐ yes ☐ no (continued on attached ☐ yes ☐ no)

3. APEDS Company _____ I.D. No. _____ Inspect. Stack No. _____ thru _____ (or Stack Nos. _____ thru _____) Location _____ Cycle _____ (continued on attached ☐ yes ☐ no)

4. OTHER Company IDEAL PLATING Location BELLEVILLE ☐ N/A
I.D. No. 05930 N.J. Stack No. _____
Type of Inspection/Activity COMPLIANCE CHECK — VISIT WITH TOM O'NEILL SUBURBAN
Inspection Results or Activity CO HAS 2 STACKS — NOT ON COMPUTER; WILL INPUT. — 3 CO STACK NOT ON CERT.; VIOLATIONS SUBCHAPTERS 8 & 17 FILED (continued on attached ☒ yes ☐ no)

Supervisor's Review
Initials [illegible] Date 1/12/84

V2

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY

AIR POLLUTION CONTROL CODE

FIELD RECORD OF VIOLATION

DATE JAN 10, 84 TIME AT SITE 9 30 a.m. p.m. from 10 30 a.m. p.m. to

STATE HEALTH DISTRICT METRO COUNTY ESSEX

Sec. A — PERSON IN VIOLATION

FULL BUSINESS NAME IDEAL PLATING & POLISHING CO.

MAILING ADDRESS P.O. BOX 100 (No.) 621 MAIN ST (Street) BELLEVILLE (City) NJ (Zip Code) 07109

TYPE OF OWNERSHIP: ☐ Individual ☐ Partnership ☒ Corporation ☐ Municipal (Type)

NAME OF OWNER, PARTNERS, OFFICERS, OFFICIALS RONALD F. KNIGGE (201) 759-5559

TITLE PRESIDENT

PERSONS INTERVIEWED DEREK THOMPSON, PL. MGR.

PERSON AUTHORIZED TO RECEIVE PROCESSES (Name)

MAILING ADDRESS (No.) ABOVE (Street) (City) (Zip Code)

REMARKS:

Sec. B — LOCATION OF VIOLATION

LOCATION ADDRESS (No.) ABOVE (Street) (City)

(Show details on reverse side) Book Plate Lot 6 Block 56

PREMISES OCCUPIED AS: ☐ Owner ☐ Lessee ☒ Tenant

OWNER (Name) BELLEVILLE IND'L CENTER, (Street) 705-757 MAIN ST. (City)

BELLEVILLE N.J. 07109

Sec. C — DETAILS OF VIOLATION

CODE REFERENCE: Chapter(s) 17 Section(s) 17:3 Paragraph(s) (K)

DETAILS CO. INSTALLED AND USED AN OPEN TOP VAPOR VAPOR DEGREASER USING A TVOS, NAMELY PERCHLOROETHYLENE WITHOUT REGISTERING SAME WITH THE DEPT. (INSTALLED IN 1981)

REMARKS I.D. # 05980
MR. THOMPSON ADVISED OF VIOLATION.
VEM 029 & 030 FORMS LEFT WITH HIM

RECOMMENDED ACTION

SIGNED: Leo Berk OK'd 1/17/84 TITLE: SR. ENV'L ENGR. MP 1/17/84

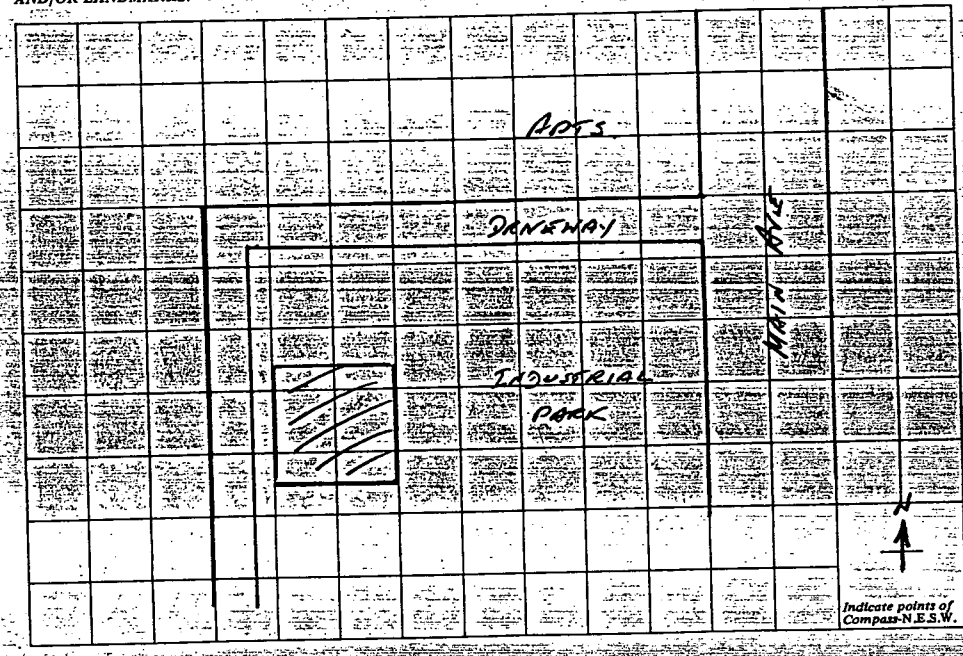
Rev 1/18/84

13

NATURE OF OPERATION *(Check one that applies)*

- ☐ a. Agriculture (Includes farming, fishing, forestry)
- ☐ b. Mining
- ☐ c. Construction
- ☒ d. Manufacturing (type) METAL PLATING
- ☐ e. Transportation
- ☐ f. Wholesale and Retail Trade (Includes restaurants)
- ☐ g. Utilities
- ☐ h. Business and Personal Services (Includes Banks, Real Estate Co., Insurance Co., Hotels, Recreational Services i.e., Movies
- ☐ i. Salvage
- ☐ j. Refuse and Garbage Disposal
- ☐ k. Government (Includes Federal, State and Local)
- ☐ l. Other

DRAW DIAGRAM BELOW SHOWING LOCATION, STREETS AND DISTANCES OF VIOLATION WITH RESPECT TO STREETS AND/OR LANDMARKS.



Comments on Location INDUSTRIAL PARK NEXT TO RESIDENTIAL (APTS.)

Statements about violation made by person interviewed NOT AWARE OF REGULATION

AIR POLLUTION CONTROL CODE

FIELD RECORD OF VIOLATION

DATE JAN 10, 84 TIME AT SITE 9 30 a.m. p.m. from 10 30 a.m. p.m. to

STATE HEALTH DISTRICT METRO COUNTY ESSEX

Sec. A — PERSON IN VIOLATION

FULL BUSINESS NAME IDEAL PLATING & POLISHING CO

MAILING ADDRESS No. P.O. BOX 100, Street 121 MAIN ST. City BELLEVILLE N.J. Zip Code 07109

TYPE OF OWNERSHIP: ☐ Individual ☐ Partnership ☒ Corporation ☐ Municipal

NAME OF OWNER, PARTNERS, OFFICERS, OFFICIALS RONALD F. KNIGGE

Type (201) 759-5559

TITLE PRESIDENT

PERSONS INTERVIEWED DEREK THOMPSON, PL. MGR.

PERSON AUTHORIZED TO RECEIVE PROCESSES R. F. KNIGGE Name

MAILING ADDRESS No. ABOVE Street City Zip Code

REMARKS:

Sec. B — LOCATION OF VIOLATION

LOCATION ADDRESS No. ABOVE Street City

(Show details on reverse side) Book Plate Lot 6 Block 56

PREMISES OCCUPIED AS: ☐ Owner ☐ Lessee ☒ Tenant

OWNER Name BELLEVILLE IND'L CENTER Street 705-757 MAIN ST. City BELLEVILLE N.J. 07109

Sec. C — DETAILS OF VIOLATION

CODE REFERENCE: Chapter(s) 8 Section(s) 8.3 Paragraph(s) (f) & (h)

DETAILS CO. INSTALLED & OPERATED AN OPEN TOP VAPOR DEGREASER USING PERCHLORO-ETHYLENE, GREATER THAN 100 GAL. CAPACITY, WITHOUT HAVING OBTAINED PERMIT/CERT. (INSTALLED IN 1981)

REMARKS I.D. # 05980
MR. THOMPSON ADVISED OF VIOLATION;
VEM 003 & 004 FORMS LEFT WITH HIM.

RECOMMENDED ACTION OK ON ORDER

SIGNED: Lou Beck 1/17/84 TITLE: SR. ENV'L ENGR

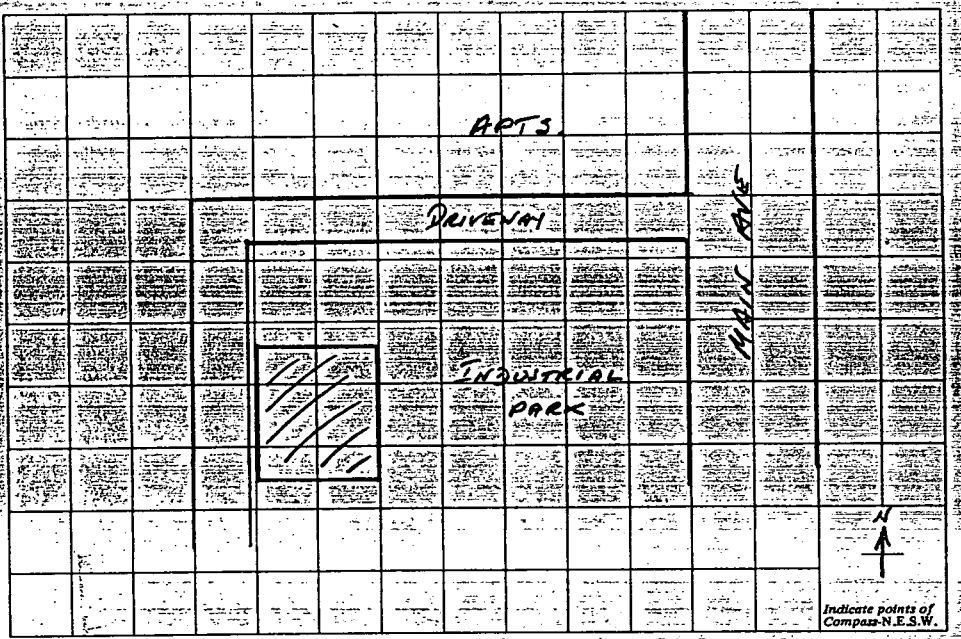
Rec 1/16/84

M.P.

NATURE OF OPERATION *(Check one that applies)*

- ☐ a. Agriculture (Includes farming, fishing, forestry)
- ☐ b. Mining
- ☐ c. Construction
- ☒ d. Manufacturing (type) METAL PLATING
- ☐ e. Transportation
- ☐ f. Wholesale and Retail Trade (Includes restaurants)
- ☐ g. Utilities
- ☐ h. Business and Personal Services (Includes Banks, Real Estate Co., Insurance Co., Hotels, Recreational Services i.e., Movies
- ☐ i. Salvage
- ☐ j. Refuse and Garbage Disposal
- ☐ k. Government (Includes Federal, State and Local)
- ☐ l. Other

DRAW DIAGRAM BELOW SHOWING LOCATION, STREETS AND DISTANCES OF VIOLATION WITH RESPECT TO STREETS AND/OR LANDMARKS.



Comments on Location INDUSTRIAL PARK NEXT TO RESIDENTIAL (APTS.)

Statements about violation made by person interviewed DID NOT KNOW REGULATIONS APPLIED

ATTACHMENT W

Form VEM-029
2/80

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Side 1

BUREAU OF AIR POLLUTION CONTROL

REGISTRATION FOR

STORAGE, TRANSFER AND USE OF

TOXIC VOLATILE ORGANIC SUBSTANCES

TO: N.J. DEPT. OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR POLLUTION CONTROL
METROPOLITAN FIELD OFFICE
1259 ROUTE 46
PARSIPPANY, NJ 07054

Read Instructions Before Completing Registration

SECTION A

1. Full Business Name: Ideal Plating
2. Mailing Address: 681 (No.) MAIN (Street) ST. P.O. box 102 (City) Belleville (State) N.J. 07109 (Zip Code)
3. Division and/or Plant Name: SAME
4. Plant Location: (No.) (Street) (Municipality) (County)
5. Location of equipment on premises (Bldg., Dept., Area, etc.): Still line Near Front wall
6. Nature of Business: Electro Plating
7. Plant Contact: Derek Thompson (Name (Print or Type)) Plant Mgr (Title) 759-1559 (Telephone No.)

SECTION B

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack(s)
2. Certificate Numbers (if any)
3. a. Number of Sources Venting to this Stack (Complete a separate VEM-030 for each source.)
   b. Number of Stacks Venting Source Operation(s)
4. Distance to the nearest Property Line (ft.) 34'
5. Stack Diameter (inches)
6. Discharge Height Above Ground (ft.)
7. Exit Temperature of Stack Gases (°F)
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.)
9. Discharge Direction ☐ Horizontal ☐ Up ☐ Down

The information supplied on Registrations VEM-029 and VEM-030 including the data in supplements, is to the best of my knowledge true and correct.

Derek Thompson — Signature — Jan 11 1984 — Date

Derek Thompson — Name (Print or Type) — Plant Mgr. — Title

FOR ASSISTANCE CALL — (609) 292-6716

FOR DEPARTMENT USE ONLY

Form VEM-030
2/80

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Side 1

BUREAU OF AIR POLLUTION CONTROL

REGISTRATION FOR

STORAGE, TRANSFER AND USE OF

TOXIC VOLATILE ORGANIC SUBSTANCES

Source Emissions And Source Data Form

(Complete this form for each source and submit with Registration Form VEM-029)

SECTION D

SOURCE INFORMATION

1. Source Description: Vapor Degreasing — OPEN TOP
2. Operating Schedule: 8 (Hours/Day) 1940 (Hours/Year) NOW (Operation Starting Date)
3. % Annual Production Throughput By Quarter: 15% (Jan.-Mar.) 15% (Apr.-June) 15% (July-Sept.) 15% (Oct.-Dec.)
4. Volume Of Gas Discharged From This Source (ACFM): (FUGITIVE EMISSIONS ONLY) Source Discharge Temperature (°F): 60°F

SECTION E

CONTROL APPARATUS ON SOURCE

	Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary			
Secondary			
Tertiary			

SECTION F

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
PERCHLOROETHYLENE	LESS THAN 1		EST.

TO INSURE PROPER COORDINATION BETWEEN VEM-029 AND VEM-030 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-029, SIDE 1.

Full Business Name: Ideal Plating

Company Designation of Stack(s):

ATTACHMENT X

Let's protect our earth

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
CN 027, TRENTON, NJ 08625

NOTICE OF PROSECUTION

TO: Ideal Plating & Polishing Co.
Post Office Box 100
681 Main Street
Belleville, New Jersey 07109
Ronald F. Knigge, President

Contact/Phone: 201-759-5559
Violation Occurred On
Premises Known As:
681 Main Street, Belleville,
Lot 6, Block 56, Essex County,
New Jersey, ID# 05980

The New Jersey Department of Environmental Protection has determined by investigation(s) made pursuant to the provisions of N.J.S.A. 26:2C-1 that on August 6, 1984 you did violate the New Jersey Administrative Code, Air Pollution Control, Title 7, Chapter 27, Subchapter and Section(s) as follows:

17.3(a) - The investigation disclosed TVOS (Perchloroethylene), listed in Table 1, being emitted from a source operation, storage tank or transfer operation into the outdoor atmosphere without the equipment and/or operation registered with the Department.

YOU ARE TO CEASE VIOLATION of said Subchapter and Section(s) on the premises owned, leased, operated or maintained by you IMMEDIATELY.

PENALTY ASSESSED: $200.00

SETTLEMENT: The above penalty must be paid within 30 days of the date of this Notice of Prosecution. To settle this claim, make payment by money order or check drawn to the order of the New Jersey Department of Environmental Protection. If you fail to settle this claim within the 30 day settlement period, the matter will be referred to the Office of the Attorney General with the recommendation to seek injunctive relief and maximum penalties for each violation as provided by law.

REBATE: You are entitled to a 75% rebate of the above offer of settlement after a waiting period of 6 months provided there are no subsequent violation of this Subchapter and Section(s). Rebate requests must be submitted in writing within the 90 day period following the specified waiting period above. If request is not made within the 90 day period, your right to rebate will be forfeited.

Should you have any questions, contact Mr. David C. Volz, Supervisor, Administrative Actions, (609) 292-1708.
Refer to Log #22354

Dated: August 27, 1984

Ernest A. Mancini, Assistant Director
Enforcement Element

PROGRAM: Metropolitan Regional Office
Suburban Regional Health Comm.

CERTIFIED MAIL

DEQ-012
10/83

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY

AIR POLLUTION CONTROL CODE

FIELD RECORD OF VIOLATION

DATE 8/6/84 TIME AT SITE 9:15 a.m. p.m. from 9:30 a.m. p.m. to I.D. # 05980

STATE HEALTH DISTRICT METRO FIELD OFFICE COUNTY ESSEX

Sec. A — PERSON IN VIOLATION

FULL BUSINESS NAME IDEAL PLATING & POLISHING CO.
MAILING ADDRESS P.O. BOX 100 / 681 MAIN ST. (No. / Street) BELLEVILLE (City) 07109 (Zip Code)
TYPE OF OWNERSHIP: ☐ Individual ☐ Partnership ☒ Corporation ☐ Municipal (Type)
NAME OF OWNER, PARTNERS, OFFICERS, OFFICIALS RONALD F. KNIGGE
DEREK THOMPSON (PLANT MANAGER)
TITLE PRESIDENT
PERSONS INTERVIEWED DEREK THOMPSON PHONE (201) 759-5559
PERSON AUTHORIZED TO RECEIVE PROCESSES RONALD F. KNIGGE (Name)
MAILING ADDRESS P.O. BOX 100 / 681 MAIN ST (No. / Street) BELLEVILLE (City) 07109 (Zip Code)
REMARKS:

Sec. B — LOCATION OF VIOLATION

LOCATION ADDRESS 681 (No.) MAIN ST. (Street) BELLEVILLE (Municipality) ESSEX (County)
(Show details on reverse side) Book Plate Lot 6 Block 56
PREMISES OCCUPIED AS: ☐ Owner ☐ Lessee ☒ Tenant
OWNER BELLEVILLE INDUSTRIAL CENTER (Name) 707-757 MAIN ST. (Street) BELLEVILLE (City) N.J.

Sec. C — DETAILS OF VIOLATION

CODE REFERENCE: Chapter(s) 7:27-17 Section(s) 17.3 Paragraph(s) a
DETAILS THE ABOVE COMPANY INSTALLED AND IS OPERATING AN OPEN TOP VAPOR DEGREASER WITHOUT HAVING FIRST REGISTERED THE EQUIPMENT AND OPERATION WITH THE DEP. PERCHLOROETHYLENE IS USED IN THE DEGREASER.
COMPANY FAILED TO COMPLY WITH ORDER, LOG # 21547 DATED JANUARY 26, 1984
COMPLIENCE DATE MARCH 26, 1984
REMARKS

RECOMMENDED ACTION NAP

Reviewed By _____ Date 8/10/84 Howard L. Blostein (Inspector's Signature)
_____ Date HOWARD L. BLOSTEIN (Print Name)
_____ Date SR. ENVIRONMENTAL ENGINEER (Title)

(OVER)

ATTACHMENT Y

PAGE 1 OF 1 #1

SUPPLEMENTAL REGIONAL HEALTH COMMISSION FIELD ACTIVITY REPORT

DATE 8/21/84 CITY Belleville LOCATION 681 Main St.

TIME 3:45 TO 4:45 U/T G Ideal Plating Co.

OWNER/OPERATOR Ideal Plating Co. Belleville, N.J.

INTERVIEWED Derek Hoppson TITLE Manager

LOCATION (GET) Main St - Belleville, N.J.

OBJECTIVE N.O.P. compliance check

WEATHER CONDITIONS n/a

FINDINGS Mr. Kuss of Ideal Plating & Polishing Co has complied with #200.00 fine & N.O.P dated 8-27-84

by Payment of #200.00 fine to N.J.D.E.P.

Plant Plating no longer uses A.T.C.E. (perchloroethylene). Now use 1,1,1 Trichloroethane

CONCLUSIONS Complies with N.O.P.

CODE VIOLATIONS None

RECOMMENDATIONS None

SIGNATURE [illegible] TITLE Chief Insp.

SUPPLEMENTAL REGIONAL HEALTH COMMISSION
[illegible]
[illegible]

F.A.R. 7/01

Form DEQ-062
12/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

FIELD INVESTIGATION ASSIGNMENT REPORT

TYPE OF INVESTIGATION REQUIRED	INSPECTOR ASSIGNED (Code No.)	DATE ASSIGNED	REQUIRED COMPLETION DATE	ACTUAL COMPLETION DATE	COUNTY	NO.	SUBCHAPTER	UNITS/	INSPECTOR'S INITIALS
1. ☐ COMPLAINT 2. ☒ ORDER/NOP COMPLIANCE 3. ☐ APEDS 4. ☐ OTHER	001	10/1/84	12/1/84	10/3/84	ESSEX	1	17	5	H.L.B.

1. COMPLAINT Date Rec'd. _____ Time _____ Tel. No. _____ Name _____ Address _____
Name and Address of Alleged Violator _____ Nature of Violation _____ Recorded by _____
Investigation Results Date _____ Time _____ Observation _____ (continued on attached ☐ yes ☐ no)
☐ Verified ☐ Not Verified Recommendations _____

2. ORDER/NOP COMPLIANCE Company IDEAL PLATING & POLISHING CO. Location 681 MAIN ST. BELLEVILLE.
NJAC 7:27 -17.3(a) Order, NOP Dated 8/27/84 Compliance ☒ yes ☐ no
Comments ~~Company in using~~ 1,1,1 trichloroethane. Company paid $200 fine. (continued on attached ☐ yes ☐ no)

3. APEDS Company _____ Location _____
I.D. No. _____ Cycle _____
Inspect Stack No. _____ thru _____ thru _____
(or Stack Nos. _____ thru _____ (continued on attached ☐ yes ☐ no)

4. OTHER Company IDEAL PLATING & POLISHING CO. Location 681 MAIN ST. BELLEVILLE
I.D. No. 05980 NJ. Stack No. _____ ☐ N/A
Type of Inspection/Activity inspection was made on 8/21/84 to determine whether or not Company had ceased to use perchloroethylene in its vapor degreaser
Inspection Results or Activity inspection revealed that the company was now using 1,1,1 trichloroethane in its vapor degreaser. Company has applied for a permit certificate for Company was using 1,1,1 trichloroethane before date of issuance of N.O.P.. (continued on attached ☐ yes ☐ no)
Supervisor's Review
Initials MR Date 10/5/84

ATTACHMENT Z

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN027, TRENTON, N.J. 08625

March 8, 1985

Mr. Derek Thompson, Plant Manager
Ideal Plating & Polishing Co., Inc.
P.O. Box #100
Belleville, NJ 07109

Reference: Tracking Number: 84-2667
Designation of Equipment: 5, 6, 7 Vapor Degreaser
Date of Action: March 6, 1985

Dear Mr. Thompson:

The referenced application for an Air Pollution permit to Construct and Certificate to Operate has been disapproved. This action has been taken for the following reason:

1. The information provided was not sufficient to allow for a complete evaluation of the permit application.

Continuation of the planned installation as described in your application will be contrary to the provisions of Chapter 106, P.L. 1967 (N.J.S.A. 26:2c) and subject to the penalties as described therein.

In accordance with the provisions of N.J.A.C. 7:27-A-1, if you are aggrieved by this action, you may be entitled to a hearing before this Department. A request for such a hearing must be made within fifteen (15) days after notice of this action.

If you have any questions, please contact me at 609-984-3032.

Very truly yours,

William F. Hart, Supervisor
New Source Review Section
Bureau of Engineering & Technology

js
c: MRO

Form DEQ-062
10/84

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF FIELD OPERATIONS

#3

FIELD INVESTIGATION ASSIGNMENT REPORT

TYPE OF INVESTIGATION REQUIRED	INSPECTOR ASSIGNED (Code No.)	DATE ASSIGNED	REQUIRED COMPLETION DATE	ACTUAL COMPLETION DATE	COUNTY	NO.	SUBCHAPTER	UNITS/ TIME	INSPECTOR'S INITIALS
☐ COMPLAINT ☐ ORDER/NOP COMPLIANCE ☐ APEDS ☒ OTHER	001 Blotkin	4/1/85	6/1/85	4/10/85	ESSEX E.	1	8	4	HLB

COMPLAINT Date Rec'd ____ Time ____ Tel. No. ____ Name ____ Address ____

Name and Address of Alleged Violator ____ Nature of Violation ____ Recorded by ____

Complaint Investigation Results:
Date:
Time:
Verified: ☐Yes ☐No

OBSERVATIONS: Company is no longer using a solvent degreasing agent 111-Trichloroethane to clean metal parts. Company is now using an alkaline water based cleaning solution no vapors and no venting to outside atmosphere. The cleaning agent is purchased from SAFETY WASH INC. 1001 JEFFERSON ST. WILMINGTON DELAWARE. COMPANY HAS REQUESTED PERMITS AND CERTIFICATES SECTION TO WITHDRAW ITS APPLICATION.

ORDER, NOP, A.C.O. COMPLIANCE
Company ____
Location ____
NJAC 7:27 ____ Order, NOP, A.C.O. Dated: ____
Compliance ____ Log No. ____
(If no, give reason) A.C.O. Item: ____

RECOMMENDATIONS:

APEDS
Company ____
Location ____
Inspect Stack No. ____

Cycle ____ A1 ____ A2 ____ NSPS ____ NESHAPS ____ PSD ____

OTHER
Company Ideal Plating & Polishing
ID No. 05980 Location Belleville
Type of Inspection/Activity Certificate
Results See Letter of Disapproval - date 3/8/85

Supervisor's Review
Initials ____ Date: 4/1/85

Z

ATTACHMENT AA

DEQ-062
9/89

PLANT ID #	INSPECTOR ASSIGNED
05980	300

N ERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTI
DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF ENFORCEMENT OPERATIONS

FIELD INVESTIGATION ASSIGNMENT REPORT

DATE ASSIGNED	DATE DUE
[illegible]	5/90
DATE COMPLETED	COUNTY
Jan 5, 1993	ESS

COMPANY NAME IDEAL PLATING & POLISHING
LOCATION Belleville 681 Main Street
CDS CLASS : A1 ___ A2 ___ B W NSPS ___ NESHAPS ___ PSD ___
TYPE OF ASSIGNMENT: ☐ Complaint ☒ APEDS ☐ Order Followup ☐ PRIORITY CODE ___
CYCLE
AIR GRANT (105) : YES NO PLLT: PT ___ S2 ___ CO ___ N2 ___ VO ___ TOXIC ___ OTHER ___
COMPLAINANT NAME ___ PHONE # ___
COMPLAINANT ADDRESS ___
DATE RECIEVED ___ TIME RECIEVED ___ COMPL. LOG ___ RECORDED BY ___
ASSIGNMENT [illegible]

PLANT CONTACT Mike Cirelli
TITLE Worker
TIME AT PLANT 11:30 (Military Time) TO 12:00
TOTAL ASSIGNMENT TIME\ OT 6 \ ___
STACKS INSPECTED 2 TEMPS ___
OF SOURCES INSPECTED 2 STK TEST REQ ___

SAMPLE TYPE	VIOLATIVE	SAMPLE #

SUBCHAPTER	# INSP	RPT Y/N
8	2	
16	2	
[illegible]	[illegible]	
OTHER		

DEQ-012 COMPLETED FOR SUBCHAP.

COMPLAINT TYPE ___ NUMBER ___
Time/Date at Complainant ___ / ___
Verified ___ Yes ___ No
Sub 5 SOP followed: ___ Yes ___ No
Give details below
VIOLATION FOLLOWUP INSPECTION
Violation Log # ___
Order Dated ___
Subchapter Violated ___
Compliance Achieved ___ Yes ___ No
Give details below

COMMENTS (by code) 001
DETAILS OF INSPECTION Inspected two stacks. The exhaust fans were all operating correctly both for Stack 1 and for Stack 2.

NJ Stack 001 CTPT 046977 Exp 6/25/95
NJ Stack 002 CTPT 046978 Exp 6/25/95

Also: One Vent hood is located in the Stack 1 and one Vent hood is in the barrel Room. The hoods vent tanks that have capacities well below the 2,000 gallon minimum.

Phone (201) 759-5559

INSPECTOR'S SIGNATURE [signature]
TITLE: Environmental Specialist
SUPERVISOR'S REVIEW INITIALS: [illegible] DATE: 2/2/93

SEE ATTACHED FOR ADDITIONAL INFORMATION: ___ Yes ___ No

AA

DEQ-062
8/91

PLANT ID #	INSPECTOR ASSIGNED
05980	659

JERSEY DEPARTMENT OF ENVIRONMENTAL PROTEC
DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF ENFORCEMENT OPERATIONS

FIELD INVESTIGATION ASSIGNMENT REPORT

DATE ASSIGNED	DATE DUE
12-3-91	12-5-91
DATE COMPLETED	COUNTY
10-30-91	ESSEX

COMPANY NAME IDEAL PLATING & POLISHING CO.
LOCATION 681 MAIN ST., BELLEVILLE
AIRS CLASS : A1 ___ A2 ___ B ___ NSPS ___ NESHAPS ___ PSD ___ CMS ___
TYPE OF ASSIGNMENT: ☐ Complaint ☒ APEDS ☐ Order Followup ☐ PRIORITY CODE ___
CYCLE 6
AIR GRANT (105) : YES NO PLLT: PT ___ S2 ___ CO ___ N2 ___ VO ___ TOXIC ___ OTHER ___
COMPLAINANT NAME ___ PHONE # ___
COMPLAINANT ADDRESS ___
DATE RECEIVED ___ TIME RECEIVED ___ COMPL. LOG ___ RECORDED BY ___
ASSIGNMENT EXPIRED CERTIFICATES!

PLANT CONTACT Vincent Eikind
TITLE Chemist
TIME AT PLANT 10:30 (Military Time) TO 11:10
TOTAL ASSIGNMENT TIME\ OT 54 \ ___
STACKS INSPECTED 2 TEMPS ___
OF SOURCES INSPECTED 7 STK TEST REQ ___

SAMPLE TYPE	VIOLATIVE	SAMPLE #

SUBCHAPTER	# INSP.	RPT Y/N
8	2	
OTHER		

DEQ-012 COMPLETED FOR SUBCHAP.

COMPLAINT TYPE ___ NUMBER ___
Time/Date at Complainant ___ / ___
Verified ___ Yes ___ No
Sub 5 SOP followed: ___ Yes ___ No
Give details below
VIOLATION FOLLOWUP INSPECTION
Violation Log # ___
Order Dated ___
Subchapter Violated ___
Compliance Achieved ___ Yes ___ No
Give details below

COMMENTS (by code) 001
Billable Stacks: ___ (give details below)
DETAILS OF INSPECTION

NJ #	DETAILS
001	Exhaust Fans 5,6,7 "RACK ROOM"
	Tanks 1-50, 51, 52, 53 are vented through a fume h and tank 1-54 is also with a separate fume exhaust Company is not in violation, because these tanks have a capacity of 100 gallons or less.
002	Exhaust Fans 1, 2, 3, 4 "BARREL ROOM"
	Tanks 4-25 and 4-26 are vented through a fume hood. These tanks also have a capacity of 100 gallons or less.

Permits are very vague. See attached listing of all tanks found in the Rack and Barrel rooms. Missing Stack 001 P/CT and check will be sent to Trenton.
SEE ATTACHED FOR ADDITIONAL INFORMATION: ___ Yes ___ No

RENEWAL FEE SENT

INSPECTOR'S SIGNATURE [signature]
TITLE: Envtl Specialist Trainee
SUPERVISOR'S REVIEW INITIALS: MK DATE: 11/27/91

ATTACHMENT BB

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

Form Approved OMB No. 158-S79016
GSA No. 0246-EPA-OT

EPA U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

III. LOCATION OF INSTALLATION

PLEASE PLACE LABEL IN THIS SPACE

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

DETACH A

FOR OFFICIAL USE ONLY

COMMENTS

INSTALLATION'S EPA I.D. NUMBER: NJD087280038 | APPROVED | DATE RECEIVED (yr., mo., & day): 80 07 24

I. NAME OF INSTALLATION: IDEAL PLATING & POLISHING COMPANY INC

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 681 MAIN ST PO Box 100

CITY OR TOWN: BELLEVILLE NEW JERSEY | ST.: NJ | ZIP CODE: 07109

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: SAME AS ABOVE 681 MAIN ST PO BOX 100

CITY OR TOWN: BELLEVILLE | ST.: NJ | ZIP CODE: 07109

IV. INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title): KNUDGE RONALD P PRES | PHONE NO. (area code & no.): 201 759 5559

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: RONALD P KNUDGE PRESIDENT

B. TYPE OF OWNERSHIP (enter the appropriate letter into box): M

F = FEDERAL
M = NON-FEDERAL

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- ☐ A. GENERATION
- ☐ B. TRANSPORTATION (complete item VII)
- ☒ C. TREAT/STORE/DISPOSE
- ☐ D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- ☐ A. AIR
- ☐ B. RAIL
- ☐ C. HIGHWAY
- ☐ D. WATER
- ☐ E. OTHER (specify):

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your installation's EPA I.D. Number in the space provided below.

- ☒ A. FIRST NOTIFICATION
- ☐ B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

EPA Form 8700-12 (6-80) CONTINUE ON REVERSE

EPA ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY *(VERIFICATION)*

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ➤ NJD087280038

IDEAL PLATING & POLISHING COMPANY INC
681 MAIN ST PO BOX 100
BELLEVILLE NJ 07109

INSTALLATION ADDRESS ➤

681 MAIN ST PO BOX 100
BELLEVILLE NJ 07109

EPA Form 8700-12B (4-80) 10/09/80

BB1

ase print or type in the unshaded areas only.
ll—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL — EPA — U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F NJD087280038 D

LABEL ITEMS
EPA I.D. NUMBER
II. FACILITY NAME
FACILITY MAILING ADDRESS
VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY
SKIP: IDEAL PLATING AND POLISHING CO. INC.

IV. FACILITY CONTACT
A. NAME & TITLE (last, first, & title): KNIGGE, RONALD PRESIDENT
B. PHONE (area code & no.): 201 759 5559

V. FACILITY MAILING ADDRESS
A. STREET OR P.O. BOX: P.O. BOX 100
B. CITY OR TOWN: BELLEVILLE
C. STATE: NJ
D. ZIP CODE: 07109

VI. FACILITY LOCATION
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 681 MAIN ST. BUILDINGS 39A @ 40
B. COUNTY NAME: ESSEX
C. CITY OR TOWN: BELLEVILLE
D. STATE: NJ
E. ZIP CODE: 07109
F. COUNTY CODE (if known):

CONTINUE ON REVERSE

EPA Form 3510-1 (6-80)

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)
A. FIRST: 3 4 7 7 (specify) COMMON METALS PLATER
B. SECOND: (specify)
C. THIRD: 7 (specify)
D. FOURTH: 7 (specify)

VIII. OPERATOR INFORMATION
A. NAME: IDEAL PLATING AND POLISHING CO. INC.
B. Is the name listed in Item VIII-A also the owner? X YES NO
C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.) F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify): P (specify)
D. PHONE (area code & no.): A 201 759 5559
E. STREET OR P.O. BOX: 681 MAIN ST
F. CITY OR TOWN: BELLEVILLE
G. STATE: NJ
H. ZIP CODE: 07109
IX. INDIAN LAND: Is the facility located on Indian lands? YES X NO

X. EXISTING ENVIRONMENTAL PERMITS
A. NPDES (Discharges to Surface Water): 9 N
B. UIC (Underground Injection of Fluids): 9 U
C. RCRA (Hazardous Wastes): 9 R
D. PSD (Air Emissions from Proposed Sources): 9 P
E. OTHER (specify): 9 (specify) E.P.A. I.D. NUMBER
E. OTHER (specify): 9 13,0,0,300 1,5,1,5-194-011 (specify) PASSAIC VALLEY

XI. MAP
Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements. F9; A/50

XII. NATURE OF BUSINESS (provide a brief description)
Industrial electroplating of electronic components, primarily precious metals such as Gold & Silver.
F9: A/51

XIII. CERTIFICATION (see instructions)
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Ronald F. Knigge, President	Ronald F. Knigge	11/7/80

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (6-80) REVERSE

BB2

I.D. – FOR OFFICIAL USE ONLY

W N J D 0 8 7 2 8 0 0 3 8 2 1

IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
F003 (Non fuel Sol)	F007 (spent plat baths)	F008 (Chrom plat baths)	F009 (chrom extn Sol)		
7	8	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
K052 (Tank Bottoms)					
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P029 (Copper cyanide)	P030 (Cyanides)	P098 (Potassium cyanide)	P099 (Silver cyanide)	P104 (Silver cyanide)	P106 (Sodium cyanide)
37	38	39	40	41	42
U134 (Methyl alcohol)	U228 (Trichloroethylene)	U239 (Xylene)			
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☒ 2. CORROSIVE (D002) ☒ 3. REACTIVE (D003) ☒ 4. TOXIC (D000)

X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
Ronald F Knigge	RONALD F KNIGGE, PRES	7 22 80

EPA Form 8700-12 (6-80) REVERSE

Please print or type in the unshaded areas only *(fill–in areas are spaced for elite type, i.e., 12 characters per inch)*.

Form Approved OMB No. 158-S80004

FORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F NJ D 08 7 28 0 03 8 2 1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☒ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*: 78 12 29

☐ 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN: YR. MO. DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☐ 1. FACILITY HAS INTERIM STATUS ☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR OR GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	G

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600 (Tanks)	G		5				
X-2	T03	20 (Incinerator)	E		6				
1	T01	~~Less Than~~ 10,000000	U		7				
2					8				
3					9				
4					10				

EPA Form 3510-3 (8-80) PAGE 1 OF 5 CONTINUE ON REVERSE

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

PASS RUN THROUGH EAST [illegible] DIVISION NEW YORK, N.Y. 10007

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES: For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.
Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				Included with above

BB4

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list. Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
WNJD087280038	WDUP 32 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	F006	200000 Not Code	P	T01	dragout to rinse tanks
2	F008	150000 Cyp	P	T01	trucked away when accumulate
3	K062	700000	P	T01	neutralized with limestone
004	P029	50000 Copper Cyanide	P	T01 ~~Use IV~~	dragout to rinse tanks
005	P030	Cyanide	P	~~T01~~	" "
006	P098	" "		~~T01~~	" "
007	P104	Silver		~~T01~~	" "
008	P106	Sod Cyanide		~~T01~~	" "
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

IV. DESCRIPTION OF HAZARDOUS WAS[illegible] (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

*

All sources of cyanide related effluent are to be phased out, and will be replaced prior to the date of compliance. A study is underway at this time and a progress report in this area will be forthcoming.

F6: A/55 F6: A/56

NEW YORK, N.Y. 10007

EPA I.D. NO. (enter from page 1)

F	N	J	D	0	8	7	2	8	0	0	3	8	3 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
4 0 35 2 4 0	0 7 4 0 8 4 4 0

VIII. FACILITY OWN[illegible]

☒ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX be[illegible]

B. If the facility owne[illegible] a facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Ronald F. Knigge	Ronald F. Knigge	11-7-80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

BB5

ATTACHMENT CC

Central

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
120 Rt. 156, CN 402, Yardville, N.J. 08625

JACK STANTON
DIRECTOR

LINO F. PEREIRA
DEPUTY DIRECTOR

Ronald Knigge, President
Ideal Plating & Polishing Co., Inc.
P.O. Box 100
Belleville, NJ 07109

Re: NOTICE OF VIOLATION
FAILURE TO SUBMIT ANNUAL REPORT

Dear Mr. Knigge:

Pursuant to the provisions of the New Jersey Solid Waste Management Act, N.J.S.A. 13:1E-1, et seq., the Department of Environmental Protection has determined by examination of our files that you violated N.J.A.C. 7:26-7.6(f)2 in that you failed to submit an annual report by March 1, 1982.

NOW, THEREFORE, YOU ARE HEREBY NOTIFIED that your facility shall submit the required annual report within fifteen (15) days of receipt of this Notice to: Frank Coolick, Bureau of Engineering Review, 32 East Hanover Street, Trenton, New Jersey 08625.

BE ON NOTICE that the Solid Waste Management Act establishes penalties of up to $25,000 per day for violation of the Department's hazardous waste management regulations. Your failure to correct the above violation, or any future violation, may result in a penalty action by this Department. Failure to submit the required report by the specified date will result in daily fines as follows:

i.	During the first week after the deadline:	$100/day
ii.	During the second week after the deadline:	$200/day
iii.	During the third week after the deadline:	$500/day
iv.	During the fourth week after the deadline and subsequently: a maximum of	$25,000/day

If you have any questions regarding this Notice, please call the Bureau of Engineering Review at (609) 292-9880.

DATE 11-15-82

David J. Shotwell

David J. Shotwell, Chief
Bureau of Compliance and Enforcement

rh

New Jersey Is An Equal Opportunity Employer

cc

ATTACHMENT DD

Form DWM-029
3/84

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT

INSPECTION REPORT

REPORT PREPARED FOR:

- [X] Generator
- [ ] Transporter
- [X] HWM (TSD) Facility

07-01-08

FACILITY INFORMATION

Name: IDEAL Plating & Polishing Company Inc.
Address: 681 Main ST.
Belleville 07109
Lot: _____ Block: _____
County: ESSEX
Phone: 759-5559
EPA ID#: NJD087280038
Date of Inspection: 4/30/86

PARTICIPATING PERSONNEL

State or EPA Personnel: GARY Bedrosian
Facility Personnel: Vinie Elkind
Derek Thompson
Report Prepared by Name: GARY Bedrosian
Region: METRO
Telephone#: (201) 669-3960
Reviewed by: Kevin Maine
Date of Review: 5-12-86

FACILITY NAME: Ideal Plating and Polishing
ADDRESS: 681 Main ST
Belleville NJ
TIME IN: 1030 COUNTY: ESSEX
TIME OUT: 1245 EPA ID : NJD087280038
DATE OF INSPECTION: 4/30/86

PHOTOS TAKEN [ ] YES [X] NO
If yes, how many? _____

SAMPLE TAKEN [ ] YES [X] NO NO. OF SAMPLES _____
NJDEP ID # _____

MANIFESTS REVIEWED [ ] YES [X] NO
Number of manifests in compliance -0-
Number of manifests not in compliance -0-
List manifest document numbers of those manifests not in compliance.

1

-A-

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

Ideal Plating and Polishing Co. Inc. is involved in the metal plating of small metal parts such as screws, clips etc. The facility operates copper, tin, Nickel, Electroless Nickel, silver, gold, cadmium, zinc and chromate processes. The majority of their Business is copper, tin, and Nickel plating. The facility has approx 70-80 plating and rinse tanks and employs 10 employees. The facility operates seperate plating operations for each different type of plating. The typical flow line process is:

① Materials come in manufactured

② Safety Wash Rinse Products to be plated are cleaned in a detergent wash

③ Rinse Parts are rinsed in a wash water tank

④ Acid Cleaner Parts are cleaned in an acid solution

⑤ Metal Plating Parts are plated in plating bath

⑥ Rinse Plated parts are rinsed in water. Cyanide baths are rinsed in a "Drag out" wash. The "Drag out" is used to replenish the plating baths. Non cyanide baths are discharged to the sewer system.

⑦ Methanol Drier Parts are dried in a Methanol drier solution.

-A-

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS

The facility has a discharge Permit to the PVSC. (see attached)

Site inspection

The facility does not have any hazardous waste on site. The facility has a collection system for all rinsewater, that is monitored for Ph with a flow meter. The PVSC has also periodicly sampled the discharge and appears to be in compliance.

The facility is considered a TWMP Facility and is not subject to RCRA Regulations

DD2

-B-

Describe the activities that result in the generation of hazardous waste.

Facility is a IWMF Facility.

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

Facility has no waste on site

CONFIDENTIAL – RECOMMENDATIONS

TO: Files

FROM: Gary Bedrosian DATE: 5/5/86

SUBJECT: Ideal Plating and Polishing

Ideal Plating and Polishing is a IWMF Facility and appears to have proper permits and systems to discharge waste to the PVSC. As long as the company can meet the requirements of discharge to the PVSC, I do not feel that the facility should be a Hazardous waste storage facility.

DD3

Passaic Valley
Sewerage Commissioners

600 WILSON AVENUE
NEWARK, N. J. 07105
(201) 344-1800

SEWER PER
1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

October 27, 1986

Ideal Plating & Polishing Co., Inc.
681 Main Street
P.O. Box 100
Belleville, NJ 07109

Attn; Vincent T. Elkind

RE: SEWER CONNECTION PERMIT

Dear Mr. Elkind:

Enclosed you will find your Sewer Connection Permit for discharge into the Passaic Valley Sewerage Commissioners system.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

Frank P. D'Ascensio,
Superintendent of Industrial Waste Control

FPD/mc

Enclosures

cc; Township of Belleville

hdd

PASSAIC VALLEY SEWERAGE COMMISSIONERS

SEWER CONNECTION PERMIT

PERMIT # 01403600

(Please use the Permit Number on any correspondance with PVSC)

In compliance with the provisions of the Federal Water Pollution Control Act, its amendments, the Clean Water Act and the Rules and Regulations of the Passaic Valley Sewerage Commissioners:

Ideal Plating & Polishing Co., Inc

(herein, after referred to as the Permittee)

is authorized to discharge from a facility located at

681 Main Street
Belleville, New Jersey 07109

to the Passaic Valley Sewerage Commissioners Treatment Works in accordance with discharge limitations, monitoring requirements and other conditions set forth herein.

Effective Date 10/20/86

Expiration Date 10/20/91

PASSAIC VALLEY SEWERAGE COMMISSIONERS

by:
Executive Director

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (10/20/86) and lasting through (10/20/91) the permittee is authorized to discharge from outlet(s) number (ed) (01403600-00118-0011). Such discharges shall be monitored by the permittee as specified below.

Volume to be determined from flowmeter readings.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
		DAILY MAX.	MEASUREMENT FREQUENCY	SAMPLE TYPE	REPORTING PERIOD
BOD (0310)	XXXXXXXXXX	XXXXXXXXXXXX	Quarterly	24 hr. comp.	Quarterly
TSS (0530)	XXXXXXXXXX	XXXXXXXXXXXX	Quarterly	24 hr. comp.	Quarterly
Volume	XXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	Quarterly
pH (9000)	XXXXXXXXXX	5.0 to 10.5	Continuous	Recorder	*

* Permittee to store pH recorder charts and have available for review by PVSC personnel on demand.

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (10/20/86) and lasting through (10/20/91) the permittee is authorized to discharge from outlet(s) number(ed) (01403600-00118-0011). Such discharge shall be monitored by the permittee as specified below. Volume to be determined from flowmeter readings. Permittee to submit volume in accordance with PVSC Pretreatment Monitoring Report Form MR-1.

40 CFR 413.14 Subpart A, .24 Subpart B

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS (a) mg/l		MONITORING REQUIREMENTS		
	4 DAY AVERAGE	DAILY MAX	MEASUREMENT FREQUENCY	SAMPLE TYPE	REPORTING PERIOD
CN (T)	1.0	1.9	Twice/Year	Grab	Semi-Annually
Cu	2.7	4.5	Twice/Year	24 hr. comp.	Semi-Annually
Ni	2.6	4.1	Twice/Year	24 hr. comp.	Semi-Annually
Cr	4.0	7.0	Twice/Year	24 hr. comp.	Semi-Annually
Zn	2.6	4.2	Twice/Year	24 hr. comp.	Semi-Annually
Pb	0.4	0.6	Twice/Year	24 hr. comp.	Semi-Annually
Cd	0.7	1.2	Twice/Year	24 hr. comp.	Semi-Annually
Total Metals	6.8	10.5	Twice/Year	24 hr. comp.	Semi-Annually
(b) TTO ABN & VOA	XXXXXXXXXXXXX	2.13	Twice/Year	24 hr. comp.	Semi-Annually
Volume	XXXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXX	Semi-Annually

(a) If effluent from the electroplating processes is combined prior to the sampling point with either one or more plant sewers carrying process wastewater from other manufacturing processes or non electroplating dilution wastewater, then the Combined Wastestream Formula described in 40 CFR 403.6 (e) shall be used to determine the discharge limitations.

(b) When analyzing for TTO, a 24 hour composite sample shall be used for all fractions, except the volatile fraction. A grab sample shall be used for this fraction.

DDE

Passaic Valley
Sewerage Commissioners

600 WILSON AVENUE
NEWARK, N. J. 07105
(201) 344-1800

CARMINE T. PERRAPATO
EXECUTIVE DIRECTOR
JAMES M. PIRO
CHIEF COUNSEL
NORMAN E. DARMSTATTER
CLERK

May 7, 1986

Mr. Gary Bedrosian
NJDEP
Divsion of Waste Management
Metro Field Office
2 Babcock Place
West Orange, NJ 07051

Dear Gary:

Enclosed is the information which you requested.

Sincerely,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

by: Tom Mack
Supervisor of Industrial Waste Control

TM/cc

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PASSAIC VALLEY SEWERAGE COMMISSIONERS

SEWER CONNECTION PERMIT

PERMIT # 01403600

(Please use the Permit Number on any correspondence with PVSC)

In compliance with the provisions of the Federal Water Pollution Control Act, its amendments, the Clean Water Act and the Rules and Regulations of the Passaic Valley Sewerage Commissioners:

Ideal Plating Inc.

(herein, after referred to as the Permittee)

is authorized to discharge from a facility located at

681 Main Avenue
Belleville, NJ 07109

to the Passaic Valley Sewerage Commissioners Treatment Works in accordance with discharge limitations, monitoring requirements and other conditions set forth herein.

Effective Date 10/1/81

Expiration Date 10/1/86

PASSAIC VALLEY SEWERAGE COMMISSIONERS

by: Executive Director

REV: 3/83

CONDITIONS

A. General Prohibitions

(1) No person shall discharge or deposit or cause or allow to be discharged or deposited into the treatment works or public sewer any waste which contains the following:

(A) Explosive Mixtures. Pollutants which create a fire or explosion hazard to the treatment works, collection system or to the operation of the system. Prohibited materials include, but are not limited to, gasoline, kerosene, naphta, benzene, toluene, xylene, ethers, etc.

(B) Corrosive Wastes. Any waste which will cause corrosion or deterioration of the treatment works. All wastes must have a pH not less than 5. Unless otherwise stated in the Sewer Connection Permit, all waste shall have a pH not more than 10.5. Prohibited materials include, but are not limited to, acids, sulfides, concentrated chloride or flouride compounds, etc.

(C) Solid or Viscous Wastes. Solid or viscous wastes which would cause obstruction to the flow in a sewer, or otherwise interfere with the proper operation of the treatment works. Prohibited materials include, but are not limited to, uncomminuted garbage, bones, hides or flashings, cinders, sand, stove or marble dust, glass, etc.

(D) Oils and Grease. (a) any industrial wastes containing floatable fats, wax, grease or oils. (b) any industrial wastes containing more than 100 mg/l of emulsified mineral oil or grease.

(E) Noxious Material. Noxious or malodorous solids, liquids or gases, which, either singly or by interaction with other wastes, are capable of creating a public nuisance or hazard to life, or are or may be sufficient to prevent entry into a sewer for its maintenance and repair.

(F) Radioactive Wastes. Radioactive wastes or isotones of such half life or concentration that they do not comply with regulations or orders issued by the appropriate authority having control over their use and which will, or may, cause damage or hazards to the treatment works or personnel operating the system.

(G) Excessive Discharge Rate. Industrial wastes discharged in a slug of such volume or strength so as to cause a treatment process upset and subsequent loss of treatment efficiency.

(H) Heat. (a) any discharge in excess of 150°F (65°C) (b) Heat in amounts which would inhibit biological activity in the PVSC treatment works resulting in a treatment process upset and subsequent loss of treatment efficiency, but in no case shall heat be introduced into the PVSC treatment works in such quantities that the temperature of the influent waters at the treatment plant exceed 40°C (104°).

(I) Unpolluted Waters. Any unpolluted water including, but not limited to, cooling water or uncontaminated storm water, which will increase the hydraulic load on the treatment system, except as approved by PVSC.

(J) Water. Any water added for the purpose of diluting wastes which would otherwise exceed applicable maximum concentration limits.

(2) No person shall discharge or convey, or permit to be discharged or conveyed, to the treatment works any wastes containing pollutants of such character or quantity that will:

(A) Not be susceptible to treatment or interfere with the process or efficiency of the treatment system.

(B) Violate pretreatment standards. As pretreatment standards for toxic or other hazardous pollutants are promulgated by USEPA for a given industrial category, all industrial users within that category must immediately conform

to the USEPA timetable as well as any numeric limitations imposed by USEPA. In addition, an industrial user shall comply with any more stringent standards as determined by PVSC or other agency.

(C) Cause the PVSC treatment plant to violate its NPDES permit, applicable receiving water standards, permit regulating sludge which is produced during treatment or any other permit issued to PVSC.

B. INSTALLATION OF SAMPLERS

The permittee shall install 24 hour composite sampler acceptable to PVSC onoutlet, with attachments for affixing seals, which shall be maintained in proper working order at all times. The installed samplers shall draw a sample, which shall be representative of plant waste, in accordance with the monitoring schedule contained in Section C, Page (s) 5 of 13.

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (10/1/81) and lasting through (10/1/86) the permittee is authorized to discharge from outlet(s) number (and) (01403600-00118-00111). Such discharges shall be monitored by the permittee as specified below. Volume to be determined from water consumption data less 5% credit for evaporation.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS XXXXXXX XXXXXXXX	DISCHARGE LIMITATIONS DAILY MAX.	MONITORING REQUIREMENTS MEASUREMENT FREQUENCY	MONITORING REQUIREMENTS SAMPLE TYPE	REPORTING PERIOD
BOD (0310)	XXXXXXXX	XXXXXXXXXX	Quarterly*	24 hr. comp.	Quarterly
TSS (0530)	XXXXXXXX	XXXXXXXXXX	Quarterly*	24 hr. comp.	Quarterly
VOLUME	XXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	N/A**
pH (9000)	XXXXXXXX	5 - 10.5	Continuous Recorder	XXXXXXXX	

*Sampling has commenced on permittee to store recorder charts and have available to review by PVSC Personnel on demand.

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2. In addition to the monitoring required in Section C.1 the Permittee is required to meet the following schedule of compliance:

A. 10/30/81 - Permittee to submit pH monitoring reports to PVSC twice a month.

B. Final pretreatment standards have been promulgated. The baseline report is due 4/27/84. Baseline report to be in accordance with General Pretreatment Regulations as stated in CFR 403.12*. Part # for Electroplating is 413.

*Copy Attached

Rev: 1/84

D. Monitoring and Reporting

1. Monitoring results obtained during the previous 3 months shall be reported on the designated Discharge Monitoring Report, PVSC Form MR-1 or 2. Reports are due January 21, April 21, July 21, October 21. The first report is due on (*). If an Industrial user fails to submit Form MR-1 or 2 on a timely basis, the Executive Director shall estimate the use for the period. The estimates may be made 30 days after the due date of the report, except for the fourth quarter where the estimates may be made after October 21. Properly signed reports required herein shall be submitted to PVSC at the following address:

Executive Director
Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, NJ 07105

2. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

3. Test Procedures:

Test procedures for the analysis of pollutants shall conform to regulations contained in the PVSC Rules and Regulations, Federal, State and local laws or regulations.

4. Recording of Results:

For each measurement of a sample taken pursuant to the requirements of this permit, the permittee shall maintain a record of the following information:

a) The date, exact place and the time of sampling;

b) The dates the analyses were performed;

c) The person(s) who performed the analysis;

d) The analytical techniques or methods used; and

e) The results of all required analyses.

*Permittee has been required to submit monitoring reports since 10/15/81.

REV: 3/83

5. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using the approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Forms (PVSC Form MR-1 or MR-2). Such increased frequency shall also be indicated.

6. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of (5) years.

7. Definitions

a) The "30 day average" discharge means the average of daily values for 30 consecutive monitoring days. For the purpose of enforcement of Pretreatment Standards, consecutive samples taken and analyzed shall be considered as being taken on consecutive days even though one or more non-sampling days intervene. In applying the Pretreatment Standards where more than one but less than 30 samples have been taken and analyzed during any month, a formula, specified by USEPA, will be used to calculate the "30 day average".

b) The "daily maximum" discharge means the highest discharge by weight or other appropriate units, as specified herein, during any calendar day.

c) The "Daily" - each operating day.

d) "Weekly" - one day each week during a normal operation day

e) "Monthly" - one day each month during a normal operating day.

f) "Composite" - a combination of individual samples obtained at regular intervals over the entire discharge day.

REV: 3/83

The volume of each sample shall be proportional to the discharge flow rate unless specifically modified by PVSC. For a 24 hour continuous discharge, a minimum of 24 individual samples shall be collected at equal intervals and at least once per hour. For continuous discharges of 12 to 24 hours, individual samples shall be taken at equal intervals and at least once per hour. For continuous discharges of less than 12 hours, individual samples shall be taken at least once every 30 minutes. For discharges which are not continuous, individual samples shall be taken such that they will be representative of plant waste.

g. "Grab" - an individual sample collected in less than 15 minutes.

h. "Quarterly" - every three (3) months.

i. "N/A" - not applicable.

E. MANAGEMENT REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or modification which will result in new, different, or increased discharges of pollutants must be reported by submission of a new PVSC Sewer Connection Application or, if such changes will not violate the effluent limitations specified in this permit, by notices to PVSC of such changes. Following such notices, the permit may be modified to specify and limit any pollutants not previously limited.

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2. Noncompliance Notification

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall notify PVSC within 24 hours of the occurrence. If this report is made orally, a written report containing the following information, shall be submitted within five (5) working days:

a. a description of the discharge and the cause of the period of noncompliance;

b. the period of noncompliance, including exact dates and times, or, if not corrected, the anticipated time the noncompliance is expected to continue, and

c. the steps being taken to reduce, eliminate and prevent a recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all pretreatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the PVSC Treatment Works resulting from noncompliance with any pretreatment limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. This condition in no way affects PVSC's right to suspend a permit in order to stop a discharge which presents an imminent or substantial hazard to the public health, safety or

welfare to the local environment or which interferes with the operation of the PVSC Treatment Works.

5. Removed Substances

Solids, sludges, filter backwash or other pollutants or hazardous waste removed in the course of pretreatment or control of wastewaters and/or the treatment of intake waters shall be disposed of in accordance with applicable Federal, State and local laws and regulations. Records documenting such disposal shall be made available to PVSC for review upon request.

F. MANAGEMENT RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the authorized representatives of PVSC, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring methods required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall, in writing, notify the succeeding owner or controller of the existence of this permit, and the need to apply for a new permit, a copy of which shall be forwarded to PVSC.

3. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, or revoked in whole or in part during its terms for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

4. Toxic Pollutants

Notwithstanding (Section C), above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition), is established under Section 307 (b) of the Federal Water Pollution Control Act (the Act), its amendments, or any other subsequent law or regulation, for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

5. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to

any applicable State Law or regulation under authority preserved by Section 510, of the Federal Water Pollution Control Act. (The Act)

7. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

8. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

DD9

ATTACHMENT EE

07-01-85 MFO

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
(609)633-1408

Michele M. Putnam
Deputy Director
Hazardous Waste Operations

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

8 1988

MAY 18 1988

MEMORANDUM

TO: Mary Jo Aiello, Chief
Pretreatment Section, Division of Water Resources

FROM: Ernest J. Kuhlwein, Jr., Chief
Bureau of Hazardous Waste Engineering
Division of Hazardous Waste Management

SUBJECT: Delistment of Elementary Neutralization or IWMF Activities From TSD Status

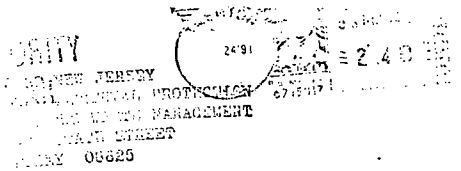
The below listed companies have filed RCRA Part A applications for both waste water treatment units (WTU's) and container storage. The WTU's mainly consist of units conducting elementary neutralization of corrosives. These companies have written to this office requesting delisting on the basis of the RCRA exclusion of WTU's and the exemption for generator accumulation of containerized waste for 90 days or less. The BHWE has responded to this request by the delistment of most of these facilities from TSD status.

In order to confirm the delistment of these facilities from TSD status the BHWE requests correspondence from your office that would indicate that the WTU's are classified as either IWMFs or as elementary neutralization units, that are subject to DWR regulation.

Company	EPA ID NO.
Ideal Plating & Polishing, Co., Inc. Belleville, Essex	NJD 087 280 038 (T01)
Johnson & Johnson Dental Products East Windsor, Mercer	NJD 057 147 258 (S02)
Kem Manufacturing East Brunswick, Middlesex	NJD 054 [illegible] 1 223 (T01)
Oakite Products, Inc. Metuchen, Middlesex	NJD 002 458 776 (T01)
David Sarnoff Research Center Princeton, Mercer	NJD 009 305 772 (T01)
RCA Corp. Moorestown, Burlington	NJD 002 342 434 (S02, T01)
Rowe International, Inc. Whippany, Morris	NJD 042 902 916 (S02, T01)
Sandvik, Inc. [illegible]	NJD 046 351 268

EE

ATTACHMENT FF



NJD087280038

IDEALPLATING & POLISHING
PO BOX 100
BELLEVILLE, NJ 07109

This site is exempt from the requirement to file the 1990 Hazardous Waste Report because:

- [x] the site was not a Fully Regulated Generator in 1990, AND
- [x] the site did not treat, store, or dispose of hazardous wastes on site in units subject to permitting requirements in 1990.

It is expected that this site will remain exempt from the requirement to file the Hazardous Waste Report:

Check one:
- [x] For 1990 only
- [ ] Permanently
- [ ] Other (Explain: TRENDS IN THE ECONOMY ~~DEPENDS ON ECONOMY~~)

EPA ID NJD087280038
Site Name IDEAL PLATING AND POLISHING CO. INC.
Site Location BELLEVILLE INDUSTRIAL CENTER BLDG 40
Site Location Address 681 MAIN ST BELLEVILLE, N.J. 07109
Contact Name: VINCENT T. ELKIND (P.O. BOX 100)
Phone Number of Contact: (201) 759-5559

If this site is NOT required to file the 1990 Hazardous Waste Report, complete and return the attached postcard. The card indicates that you are exempt from the report requirement. NJDEP will use the postcards to distinguish sites that are exempt from reporting from those sites that are out of compliance. Return the card to the address listed on page iii.

THIS SITE IS EXEMPT FROM THE REQUIREMENT TO FILE THE 1990 HAZARDOUS WASTE 2-4-91

- [ ] the site was not a Fully Regulated Generator in 1990, AND
- [x] the site did not treat, store, or dispose of hazardous wastes on site in units subject to permitting requirements in 1990.

It is expected that this site will remain exempt from the requirement to file the Hazardous Waste Report:

Check one:
- [ ] For 1990 only
- [ ] Permanently
- [ ] Other (Explain: IF WE MANIFEST MORE & ECONOMY PICKS UP)

EPA ID NJD087280038
Site Name IDEAL PLATING & POLISHING CO. INC.
Site Location (BELLEVILLE INDUSTRIAL CENTER BLDG 40)
Site Location Address 681 MAIN ST., P.O. BOX 100, BELLEVILLE, N.J. 07109
Contact Name: VINCENT T. ELKIND (CHEMIST)
Phone Number of Contact: (201) 759-5559

over for address

ATTACHMENT GG

FEB. 29, 1991

NOTIFICATION OF HAZARDOUS WASTE OF FEB - 8 1991
IDEAL PLATING AND POLISHING CO. INC.
DISCHARGES TO THE SANITARY SEWER

FROM: IDEAL PLATING AND POLISHING CO.
681 MAIN ST., P.O. BOX 100
BELLEVILLE, N.J. 07109
V.T. Elkind, (Chemist) V.T. ELKIND

TO: (A) MR. FRANK P. D'ASCENSIO
MANAGER INDUSTRIAL + POLLUTION
CONTROL, PASSAIC VALLEY
SEWERAGE COMMISSIONERS (PVSC)
600 WILSON AVE., NEWARK, N.J.
07105

(B) DIRECTOR, AIR AND WASTE
MANAGEMENT, DIVISION OF
ENVIRONMENTAL PROTECTION
AGENCY, REGION II
26 FEDERAL PLAZA
NEW YORK, N.Y. 10278

(C) ASSISTANT COMMISSIONER, DIV.
OF HQ WASTE MANAGEMENT,
DEPT. OF ENVIRONMENTAL
PROTECTION AGENCY
401 EAST STATE ST.
TRENTON, N.J. 08625

SUBJECT: HAZARDOUS WASTE NOTIFICATION

1. TWICE A YEAR WE FILE A PRETREATMENT MONITORING REPORT WITH THE LOCAL POTW, THE PASSAIC VALLEY SEWERAGE COMMISSION. REGULATED HEAVY METALS, COPPER, NICKEL, ZINC, CHROMIUM, CADMIUM, LEAD; AND CYANIDE GO TO THE SEWER WITHIN PVSC LIMITS AND ARE NOT SUBJECT TO THIS NOTIFICATION REQUIREMENTS.

2. WE ON AN AVERAGE WORK DAY DISCHARGE 42,000 GALLONS TO THE SEWER. WE DESTROY CONSIDERABLE CYANIDE (CN) WITH SODIUM HYPOCHLORITE.

3. WE DISCHARGE CONTINUOUSLY TO THE SEWER AN AVERAGE OF 42,000 GALLONS OF MOSTLY RINSE WATER, AS STATED ABOVE. WE ADD TO THIS MONTHLY MORE THAN A KILOGRAM QUANTITY SPECIFIED, OF 100.

4. WE CERTIFY THAT OUR PROGRAM REDUCES THE VOLUME OF ATTRIBUTED HAZARDOUS WASTES AND THE TOXICITY TO THE DEGREE THAT IT IS PRACTICAL, ECONOMICALLY.

5. THE FOLLOWING TABLE ESTIMATES THE MASS AND CONCENTRATION, IN A ONE TIME REPORT OF A CALENDAR MONTH, OF THE CONSTITUENTS.

TABLE OF HAZARDOUS WASTE NOTIFICATION

HAZARDOUS WASTE & NO.	TOTAL (KG.) HAZARDOUS COMPONENT, 12 MONTHS	CALENDAR MONTH KILOGRAM (KG) TOTAL SOL'N	CALENDAR MONTH KILOGRAM (KG) HAZ. COMPONENT	EFFLUENT HAZ. COMPONENT MG./L.	TYPE DISCHARGE
F007 (R,T) SPENT PLATING BATH SOL'N, RESIDUE OF CN DESTRUCTION	3.84	19.7	.32	.05	*
F009 (R.T.) STRIP SOL'N, CN MOSTLY DESTROYED	1.26	104	0.1	0.066	*
P076 (H) NITROGEN OXIDE	1.2	250	0.1	0.031	**
P104 (H) SILVER CYANIDE	1.2	568	0.1	0.031	***

* OVER DAYS AND WEEKS.

** CONTINUOUSLY FROM BRIGHT DIP RINSE

*** NOT MUCH SILVER PLATING; REPORTING NOT REQUIRED IN PRETREATMENT MONITORING, WHAT LITTLE AVAILABLE, CONTINUOS OUT OF RINSE

CN = CYANIDE

GG2

ATTACHMENT HH

Form ADM-012

MEMO NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO FILE through Jeff Sterling DATE August 13, 1991

FROM Stephan Szardenings

SUBJECT Ideal Plating and Polishing Co., Inc. - Hazardous Waste Investigation

On 8/12/91 I performed a hazardous waste investigation at the Ideal Plating & Polishing Co., Inc. (IPP) in Belleville, N.J. The facility representative was Mr. Victor T. Elkind - Chemist.

IPP is moderately sized electroplating company. IPP plates pre-fabricated, pre-finished parts (that have copper, steel, and/or brass as a base metal) according to the customers specifications. IPP operates three (3) rotating barrel lines, five (5) rack plating baths, and one (1) plating line which is used to apply a conversion coating to a part being plated with Cadmium, or Silver. This operation is done out of open top, plastic 55 gallon drums. IPP can apply several types of metal platings at this location - copper, zinc, tin (largest volume), tin lead, cadmium, chromium (dip tank), silver, indium, some gold, nickel, nickel strike, and nickel sulfate. The hazardous materials that would be found in one, or more, of these plating baths would be:

A) Conversion coatings - chromic acid
B) Copper plating tank - potassium cyanide, potassium/copper cyanide
C) Zinc plating tank - sodium cyanide, zinc sodium cyanide, zinc oxide/zinc cyanide
D) Cadmium plating tank - Cadmium oxide, sodium cyanide
E) Nickel plating tank - nickel sulfate, nickel chloride
F) Nickel Chloride strike - nickel chloride, hydrochloric acid
G) Nickel Sulfate - nickel chloride, & sulfannic acid
H) Tin Plating tank - sulfate, & sulfuric acid.

IPP does not ship any hazardous wastes off-site. This was confirmed by reviewing their generator's annual report for 1990. IPP notified the Department that they did not generate any hazardous waste in the year 1990. All of IPP's hazardous waste comes in the form of rinse water, from the rinse tanks found in the various plating lines. IPP has an active industrial sewer connection permit with the Passaic Valley Sewerage Authority (PVSA)(permit #1403600), to discharge @42,000 gallons of wastewater to their facility. IPP does perform an automated neutralization & sampling operation to meet PVSA's permit requirements. PVSA also performs their own sampling episode every quarter at IPP. All of IPP's rinse water is directed to one side of a pit (capacity is @1,200 gallons) where the rinse water is first neutralized by using either sodium bicarbonate, or sulfuric acid. Once it has been treated, it is transferred over to the other side for discharge to PVSA. It is here that IPP draws daily samples, and retains them.

HH1

The question was asked, whether IPP generates any sludges as a result of their plating or neutralization process. Mr. Elkind stated that he has never generated any such sludge material from either operation. He attributes the dragout tanks and the high water useage, to keep any materials that may be in the solution, from settling in the plating tanks or water treatment pits.

Mr. Elkind pointed out, that even though IPP does have a number of materials that could be considered hazardous, very little of this material actually goes out into the sewer system. By the uses of dragout tanks, after every plating tank/dip, IPP has reduced the amount of metals that get released into the sewer system. dragout tank is a rinse tank that does not have a continuous rinse to the drain system. IPP is able to recycle the metals back into the original plating tank. As the water evaporates off both the plating & dragout tanks (because both are heated), the metal content gets higher in the dragout, and the contents are pumped back into the plating tank. IPP then performs a sampling on the plating tank to determine whether or not a further adjustment is needed. The empty dragout tank is then filled up with fresh water. When the parts are then placed in the next rinse tank, the amount of metals deposited in it are significantly lower, meaning less metals in the wastewater.

It was also asked, how does IPP deal with the cyanides that are used in their plating operations. For IPP's largest cyanide sources (the two copper plating tanks that utilize the potassium/copper cyanide), IPP has set up a very basic cyanide destruct/treatment operation. The rinse water that comes off of the final rinse tanks, before going to the neutralization pit, is diverted into a cutoff, 55 gallon drum. Here, IPP applies sodium hyperchlorite (to destroy the cyanides), and sodium hydroxide (to raise the pH) by constantly monitiering the rinsewater prior to going to the neuttralization pit. IPP also performs pre-treatment monitoring on the rinse tanks as part of PVSA's monitering program.

IPP utilizes utilizes a non-hazardous material (DYNASOLV) to perform the actual degreasing operations on parts before they are cleaned (MSDS included), and a sodium hydroxide (caustic soda) solution is used to clean the parts thoroughly before being plated.

Mr. Elkind indicated to me that IPP performs sampling tests on all plating tanks on a regular schedule. This schedule is determined by how often the certain plating operation is placed in use.

Mr. Elkind also stated that IPP will, on an as needed basis, mix up their own plating solutions. They will also produce plating tank solutions for their sister company (Independance Plating 107 Alabama Ave. Paterson, N.J.) when they need some material. This material generally consists of a metal brightener solution. IPP is also storing on-site, old plating solutions (still useable material) from plating lines that IPP has had to dismantle due to the current economic situation. All old plating solutions, and the materials that are used to create new one, or used just to supplement the solutions already in use, are generally stored in either steel, or plastic 55 gallon drums. Some material is stored in fiber drums, or smaller (5 gallon) containers. All materials that could pose a problem, are stored in a room in back that is somewhat secluded from the rest of the building.

The only other item of interest is that IPP will use methanol to perform a quick dry for some of their parts. After a part has come out of a plating solution, they are dipped into 1 of 2 - 55 gallons drums containing methanol.

These drums are enclosed in a steel box which is opened as needed. Once dipped, they are then placed in a hot dryer box. The methanol helps drive off the water at a faster rate. IPP does not generate any spent methanol. All of the methanol placed on the parts is evaporated off when it is placed in the dryer.

Based upon the documentation reviewed, and the facility tour performed, IPP is not a generator of hazardous waste, but maintains the EPA Identification number for their own benefit. I feel that no further enforcement action is needed at this time.

HH2

07-01-08

RCRA INSPECTION TRACKING

COMPANY DATA

EPA ID NUMBER: NJD087280038 FACILITY NAME: IDEAL PLATING and POLISHING CO., INC.
MANDATORY (Y/N) Y LAND BAN (Y/N) Y FEE (Y/N) N FY/QUARTER: 92/1
CONTACT: VINCENT J. ELKIND FACILITY PHONE: (201) 759-5559
COUNTY/MUNICIPAL CODE 07 01 FACILITY STREET: 681 MAIN ST. P.O. BOX 100
CITY: BELLEVILLE FACILITY STATE NJ FACILITY ZIP: 07109
CORPORATE NAME: (SAME AS ABOVE) CORPORATE STREET:
FACILITY CITY: FACILITY STATE FACILITY ZIP:
CONTACT: FILE NUMBER NONE Region code N

INITIAL INSPECTION (X)

INSPECTION DATE: 8-12-91 SITE VISIT (Y/N) Y
REGULATORY STATUS CODE 01 EVALUATION TYPE CODE 06 GRANT CODE 01
DATE NOV ISSUED NONE ISSUED SCHEDULED COMPLIANCE DATE
INSPECTOR/REVIEWER S. SZARDENINGS DATE ASSIGNED DATE REVIEWED
DATE VIOLATIONS REVERSED INCIDENT CASE NUMBER

FOLLOW-UP INSPECTION ( )

INSPECTION DATE: SITE VISIT (Y/N)
INITIAL INSPECTION DATE: VERIFIED COMPLIANCE DATE
EVALUATION TYPE CODE GRANT CODE
INSPECTOR/REVIEWER DATE REPORT REVIEWED

AREA OF EVALUATION

		GW	CLO	$$$	PTB	SCH	MNF	LDB	OTH
CLASS OF	I*						O		O
VIOLATION	I						O	Z	O
	II						O		O

(ENTER Z, X, O, H OR C IN THE APPROPRIATE BOX)

I=UNDETERMINED OR UNDER INVESTIGATION
X=VIOLATION
H=HIGH PRIORITY VIOLATOR
C=FACILITY NOT IN COMPLIANCE WITH COMPLIANCE SCHEDULE IN CORRECTIVE ACTION COMPLIANCE SCHEDULE IN AN ORDER OR PERMIT

AREAS OF EVALUATION:
GW = Ground Water CLO = Closure $$$ = Financial responsibility PTB = Part B
SCH = Compliance Schedule MNF = Manifest LDB = Land ban OTH = other

COMMENTS: Company does not generate any hazardous wastes off-site. All hazardous waste (electroplating rinse water) is sent to the local POTW - Passaic Valley Sewerage Authority.

ATTACHMENT II

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028

Scott A. Weiner
Commissioner

Karl J. Delaney
Director

M E M O R A N D U M

TO: Kenneth J. Kloo, Section Chief
Bureau of Field Operations - Site Assessment

FROM: Nick Sodano, HSMS II
Bureau of Field Operations - Site Assessment

SUBJECT: Inspection of Ideal Plating and Polishing Company, Inc.
Belleville Industrial Park, Belleville, Essex County

DATE: June 9, 1993

I conducted a site inspection on June 7, 1993 at the above noted facility. I met a Mr. Vince Elkind, who identified himself as the company Chemist. Per Mr. Elkind, operations only produce liquid wastes which are discharged to the Passaic Valley Sewerage Commissioner's facility. Mr. Elkind stated that the sewerage authority regulates them for lead, copper, chromium, nickel, cadmium, zinc, silver and cyanide, but the largest component of their wastewater contaminants is tin. Mr. Elkind gave me a number of site sketches, an aerial photo of the facility and a recent discharge monitoring report from his laboratory files (see attached). We then toured the plant and I observed that the operation is conducted on poured concrete slabs. At one location I observed a drum of Hydrochloric Acid which had no top. The concrete at this location was badly eroded, but when I poked the floor with a metal rod, the eroded section appeared solid. The operation was generally sloppy with encrusted spills to all appurtenances and the floor due to the nature of the work which involves dipping metal objects into multiple open vats.

The facility is constructed with a central concrete trench which receives all discharges from the vats. The trench was full of wastewater during my inspection and contained a light colored sludge which Mr. Elkind said had been building up since the company started operations. The trench discharges to a pit where monitoring and neutralization occur prior to discharge to the sewerage authority.

I asked Mr. Elkind whether he ever considered the effect of acid on concrete and if he checked the trench to determine if its integrity had been compromised. He said that the trench has never been checked or cleaned. He complied with my request to test the pH in the trench which turned out to be 4.5. He allowed me to check the trench with my auger and I found that the bottom felt rough but intact and I told Mr. Elkind that it appeared so. There appeared to be approximately one foot of sludge at the location where I checked. Mr. Derek Thompson, Plant Manager, stated that the trench graded from eight inches at one end to about two feet at the other end. I observed varying levels of sludge throughout the trench.

We continued our tour into the back of the facility where I noticed numerous drums of "bright nickel" solution which Mr. Elkind referred to as raw materials. There was absorbent grit spread on the floor around the drums and an obvious spill of liquid. We proceeded into the next room which had a drum of potassium cyanide at one end and a spill of green liquid at the other end with a shop vacuum nearby. The area of cyanide had white powder spills on the floor. Mr. Thompson later told me that a forklift driver speared a drum of bright nickel solution which caused the spill. The spill apparently flowed to the cyanide room where personnel attempted a cleanup with the shop-vac before it broke down.

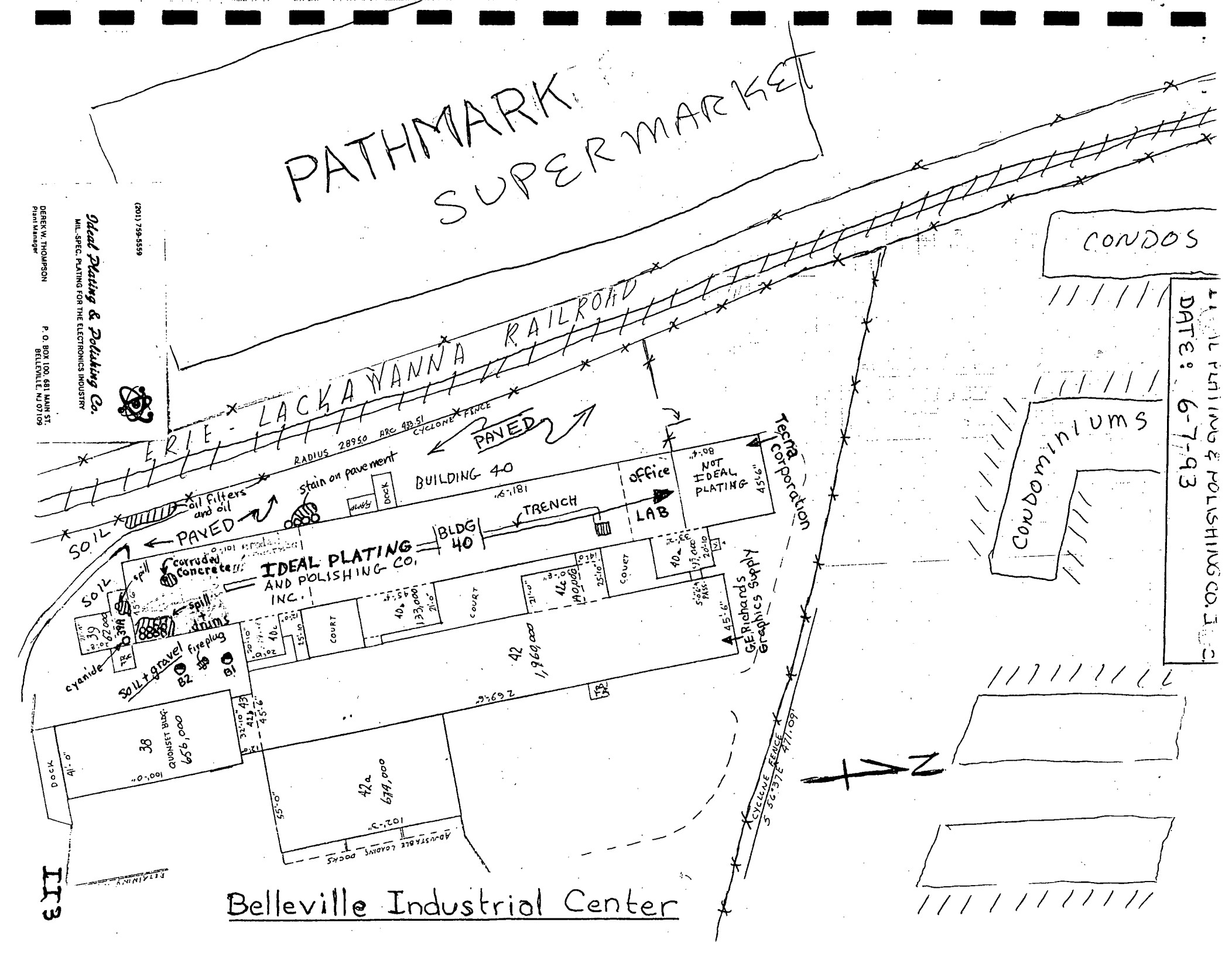
I departed from the inside of the plant and inspected the grounds surrounding it. I observed four full drums near the concrete ramp (see sketch) and noted that only one had markings. The marked drum, which read "114 slushing oil", was rusted and covered with oil. The macadam surrounding the drum was stained, but very resistant to penetration by my augur. I proceeded to the rear of the facility and noticed an area next to the railroad fence which was apparently cemented by wasteoil and strewn with numerous automobile oil filters. Proceeding around the rear of the facility I entered an area of gravel and very fine grain soil (see sketch). I augured into this area in two locations and noted a more natural appearing soil at six inches which had a normal odor. I was not able to observed the areas marked "court" on the sketch.

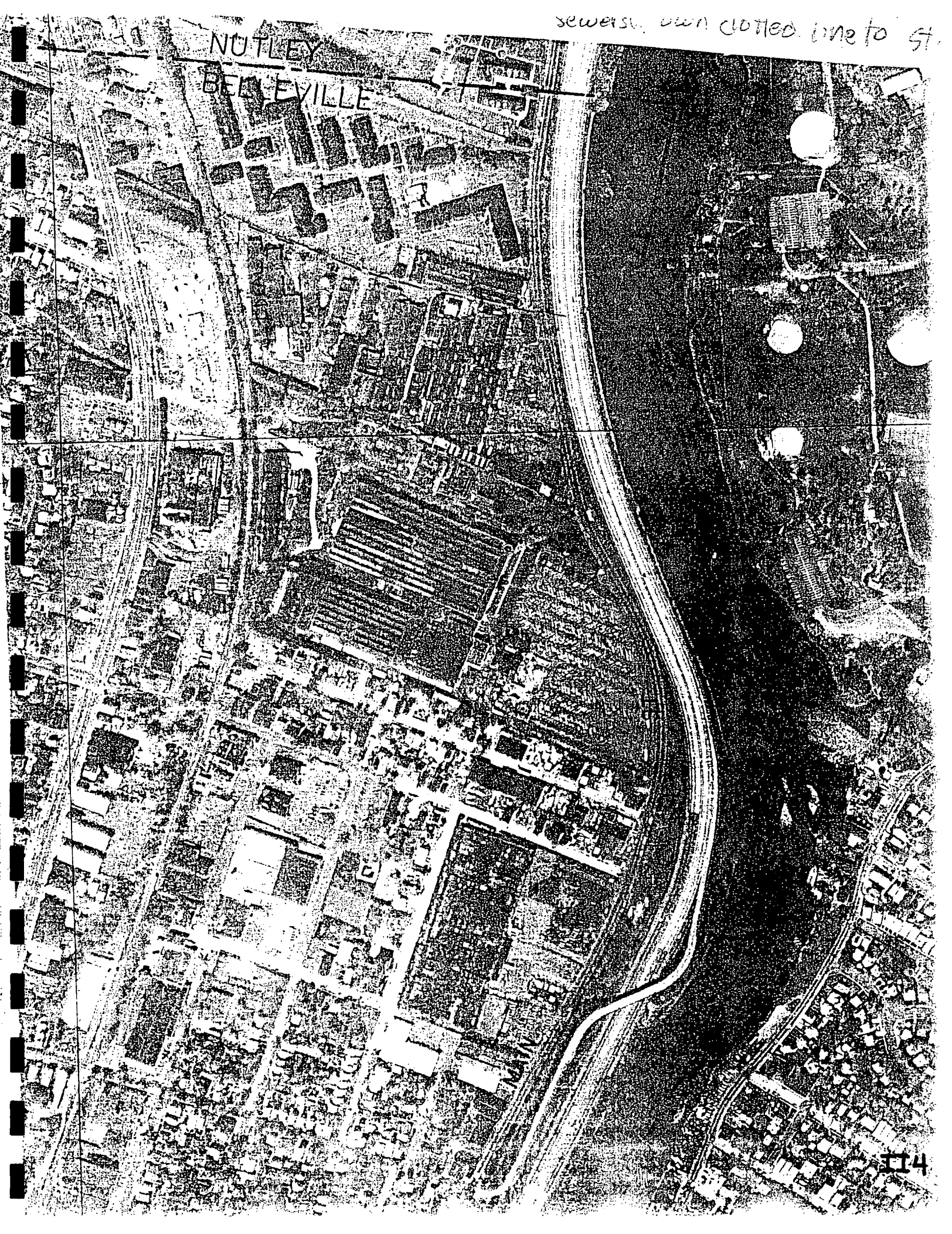
CONCLUSIONS

1. No obvious discharges noted besides the apparently minor wasteoil spill;

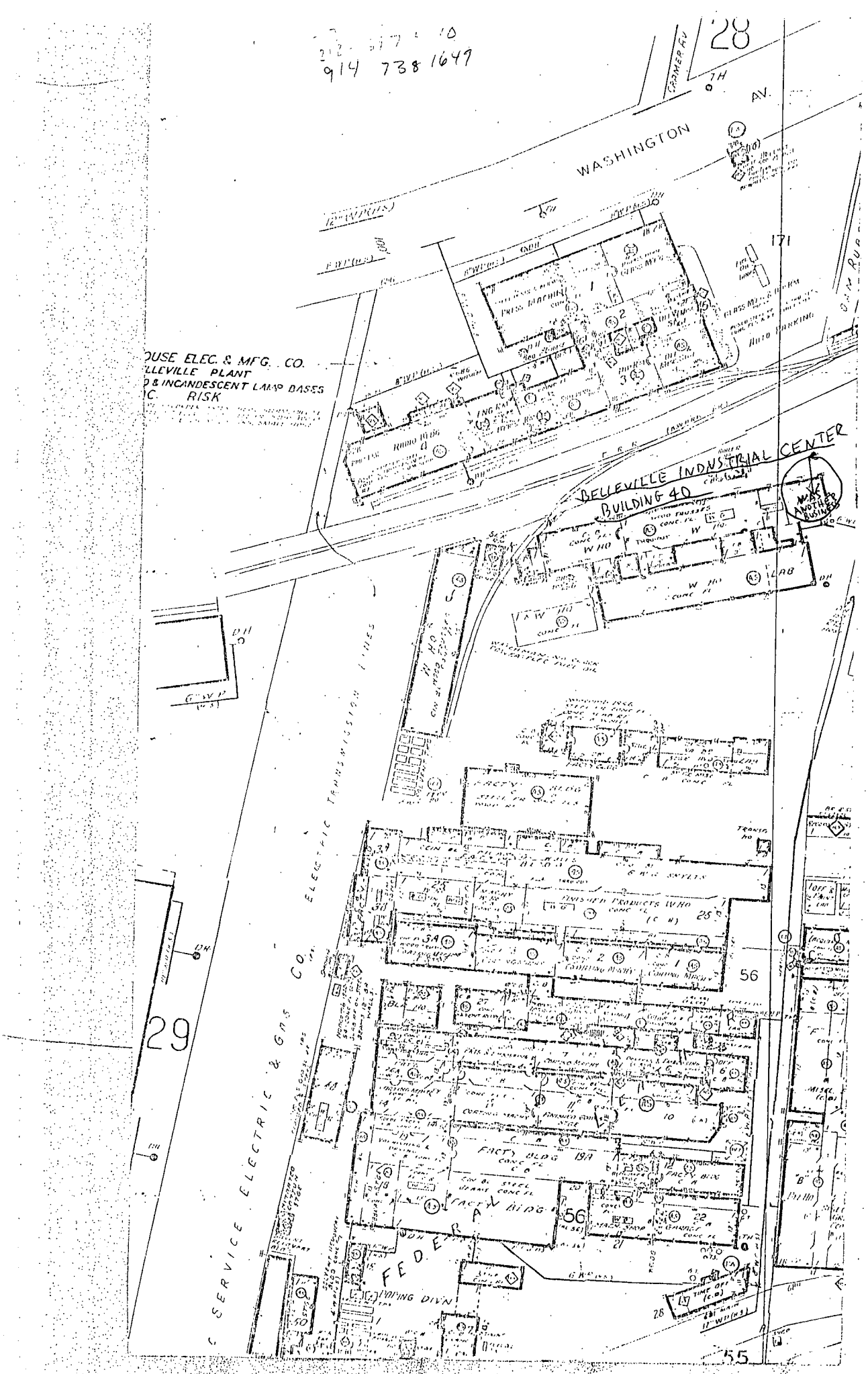
2. It is possible that the integrity of the trench may is compromised by action of acidic wastewaters, but my minimal inspection of same did not indicate a severe erosion;

3. The soil and gravel area had an odd visual appearance of a powder.

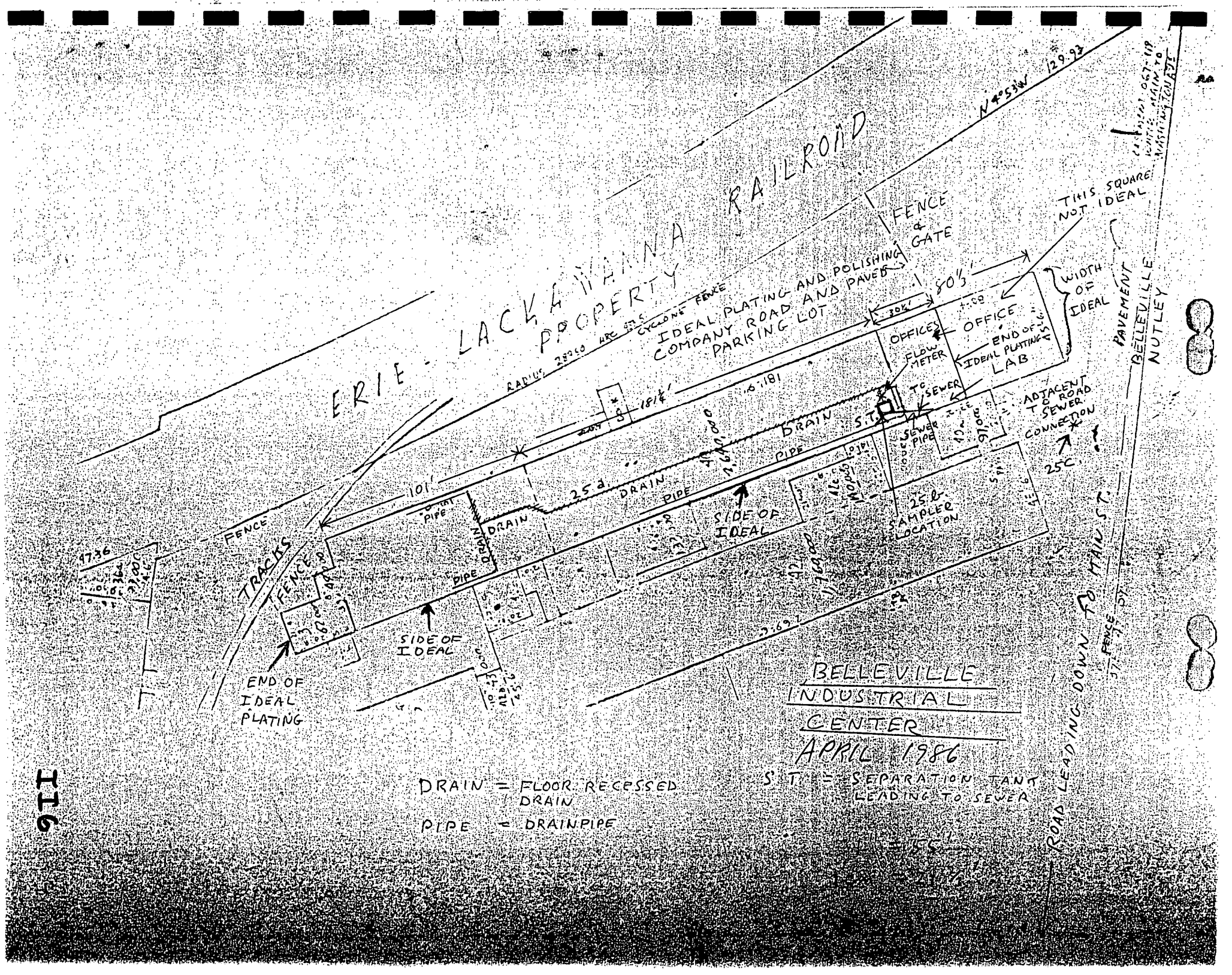

PATHMARK SUPERMARKET
ERIE-LACKAWANNA RAILROAD
CONDOS
CONDOMINIUMS
DATE: 6-7-93
Ideal Plating & Polishing Co.
MIL.-SPEC. PLATING FOR THE ELECTRONICS INDUSTRY
(201) 759-5559
DEREK W. THOMPSON
Plant Manager
P. O. BOX 100, 681 MAIN ST.
BELLEVILLE, NJ 07109
RADIUS 28950 ARC 433.51
CYCLONE FENCE
PAVED
BUILDING 40
office
LAB
NOT IDEAL PLATING
TRENCH
oil filters and oil
stain on pavement
SOIL
BLDG 40
IDEAL PLATING AND POLISHING CO. INC.
corroded concrete
spill
drums
cyanide
soil + gravel
fireplug
B1
B2
COURT
HOPPER
Terra corporation
GE Richards Graphics Supply
CYCLONE FENCE
S 52°37'E 471.09'
DOCK
QUONSET BLDG
Belleville Industrial Center


sewers. Dash dotted line to St.
NUTLEY
BELLEVILLE
I-4

914 738 1649



II 5


ERIE - LACKAWANNA RAILROAD PROPERTY
RADIUS 2896.0 ARC 97.5
CYCLONE FENCE
IDEAL PLATING AND POLISHING COMPANY ROAD AND PAVED PARKING LOT
N 4°53'W 129.93
FENCE & GATE
THIS SQUARE NOT IDEAL
WIDTH OF IDEAL
30'
50'
OFFICES
OFFICE
FLOW METER
END OF IDEAL PLATING LAB
TO SEWER
181.4'
DRAIN
S.T.
SEWER PIPE
ADJACENT TO ROAD SEWER CONNECTION
25C
101'
25a
PIPE
25b SAMPLER LOCATION
SIDE OF IDEAL
FENCE
TRACKS
97.36
END OF IDEAL PLATING
SIDE OF IDEAL
BELLEVILLE INDUSTRIAL CENTER
APRIL 1986
BELLEVILLE
NUTLEY
PAVEMENT
ROAD LEADING DOWN TO MAIN ST.
DRAIN = FLOOR RECESSED DRAIN
PIPE = DRAINPIPE
S.T. = SEPARATION TANK LEADING TO SEWER
T16

Name _____ P.O. BOX 100
681 MAIN STREET
Mailing Address _____ BELLEVILLE, NJ 07109

Facility Location BELLEVILLE INDUSTRIAL CENTER

Category & Subpart 413+A,B,G Outlet# 01403601-00118-0011

Contact Offical V.T. ELKIND Telephone# (201) 759-5559

Monitoring Period					
9	1	92	9	30	92
Mo.	Day	Yr.	Mo.	Day	Yr.
Start			End		

Production rate (if applicable)

For Reporting Period

		AVG	MAX
R.F.	Regulated flow-gal/day	43,660	45,621
T.F.	Total Flow-gal/day	46,189	48,022

Method used R.F. = 0.95 x T.F.
GAL/DAY = T.F OR R.F. ÷ 17 DAY

SEE ATTACHED FLOW DIAGRAM

Parameter		Mass Limit or Concentration Average	Maximum	Units	No. of Samples	Sample type Comp./grab
LEAD	Sample measurement	0.154	0.154	MG/L	1	
	Permit requirement	0.4	0.6	MG/L	1	COMP
COPPER	Sample measurement	1.16	1.16	MG/L	1	
	Permit requirement	2.7	4.5	MG/L	1	COMP
CHROMIUM	Sample measurement	<0.02	<0.02	MG/L	1	
	Permit requirement	4.0	7.0	MG/L	1	COMP
NICKEL	Sample measurement	0.38	0.38	MG/L	1	
	Permit requirement	2.6	4.1	MG/L	1	COMP
CADMIUM	Sample measurement	<0.01	<0.01	MG/L	1	
	Permit requirement	0.7	1.2	MG/L	1	COMP
ZINC	Sample measurement	0.07	0.07	MG/L	1	
	Permit requirement	2.6	4.2	MG/L	1	COMP
SILVER*	Sample measurement	0.8*	0.8*	MG/L	1	
	Permit requirement	0.7	1.2	MG/L	1	COMP
TOTAL METALS	Sample measurement	1.63	1.63	MG/L	1	
	Permit requirement	6.8	10.5	MG/L	1	COMP
TOTAL CYANIDE	Sample measurement	0.33	0.33	MG/L	1	**
	Permit requirement	1.0	1.9	MG/L	1	GRAB

PVSC Form MR-1 Rev. 4/6/87 P1

* & PAGE 2

Cu 1.16
Ni 0.38
Zn 0.07
Cr 0.02
1.63
TOTAL METALS

1992	Ag (mg/l)
JULY	<0.02
JUNE	0.04
MAY	<0.01
AUG	<0.02
SEPT	0.8

} more than 4 values

Certification of Non-use if applicable (use additional sheets)
BASED ON MY INQUIRY OF THE PEOPLE DIRECTLY RESPONSIBLE FOR MANAGEING COMPLIANCE FOR TTO AND IN LIEV OF MONITORING FOR TTO (PERMIT LIMITATION FOR PRETREATMENT STANDARD) I CERTIFY THAT TO THE REST OF MY KNOWLEDGE, NO DUMPING OF CONCENTRATED TOXIC ORGANICS HAS OCCURRED SINCE FILING OF THE LAST DISCHARGE MONITORING REPORT.

Compliance or non compliance statement with compliance schedule (use additional sheets if necessary) for every parameter used.
— MONTH AFTER MONTH SILVER IS FOUND TO BE AT TRACE LEVELS (PAGE 1). OCCASIONALLY SILVER RISES BUT IS WELL BELOW THE MAXIMUM. THUS HEAVY METALS ARE IN COMPLIANCE (< 1.2)
— CYANIDE (TOTAL) CAME TOO LATE TO SUBMIT ANOTHER SAMPLE.** A REPEAT ANALYSIS WAS SUBMITTED AS SOON AS POSSIBLE. WE ARE IN COMPLIANCE. MORE THAN ONE TOTAL CYANIDE WILL BE TAKEN IN OCTOBER TO AVOID DUPLICATION.
— A SYSTEM OF NON-FLOWING RINSES (DRAGOUTS AND A CYANIDE DESTRUCT UNIT ACHIEVE COMPLIANCE.

Explain Method for preserving samples
CYANIDE GRAB SAMPLES ARE STABILIZED WITH SODIUM HYDROXIDE TO pH 12. COMPOSITE HEAVY METALS SAMPLES ARE STABILIZED WITH NITRIC ACID TO A pH OF 1 OR BELOW.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaulate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

403.6(a)(2)(ii) revised by 53 FR 40610, October 17, 1988

Vincent T. Elkind
Signature of Principal Executive or Authorized Agent

VINCENT T. ELKIND
Type Name and Title

CHEMIST

10-16-92
Date

PVSC Form.MR-1 Rev. 5 3/91 P2

ATTACHED

111

IDEAL PLATING AND POLISHING CO.

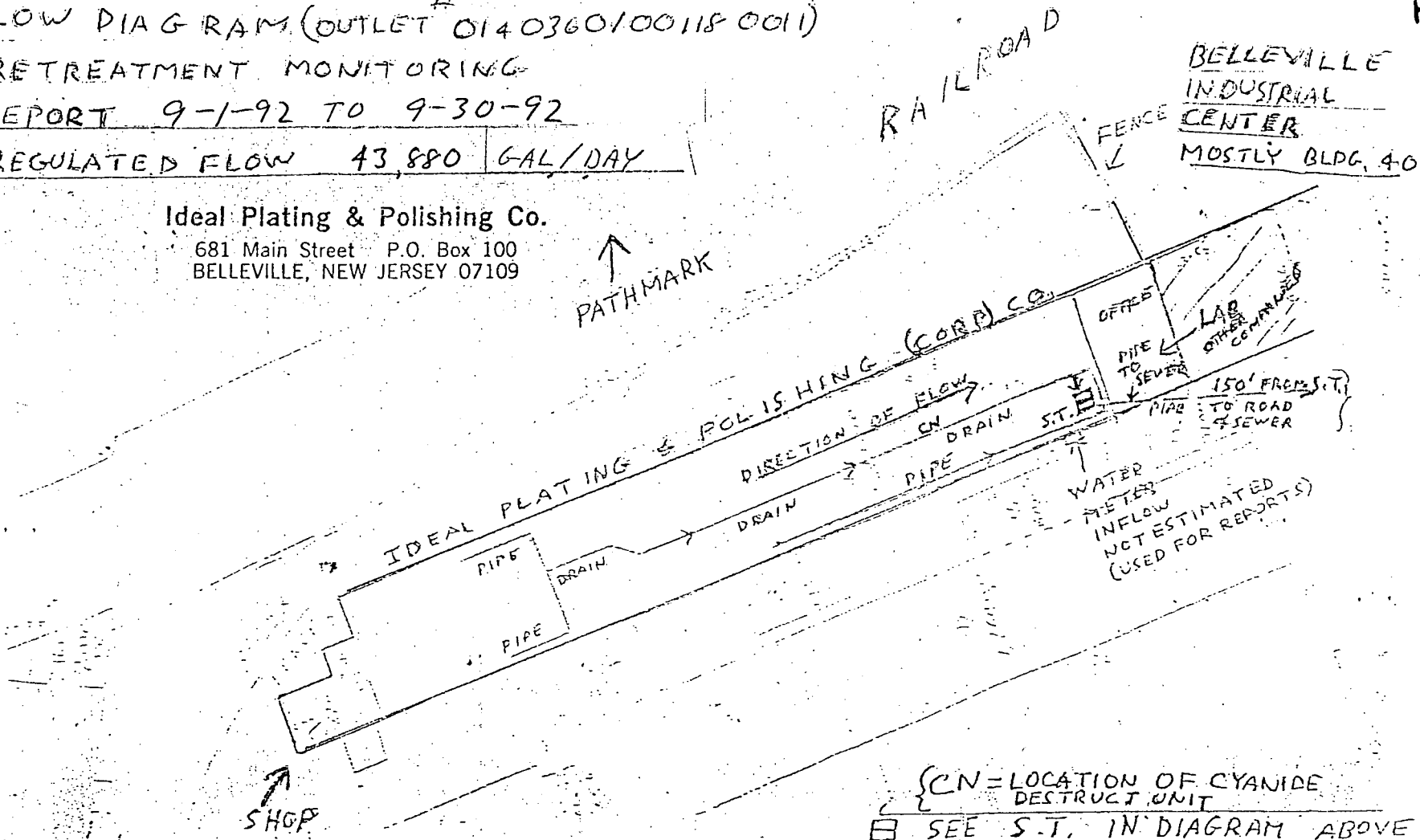
FLOW DIAGRAM (OUTLET # 0140360/00118 0011)

PRETREATMENT MONITORING

REPORT 9-1-92 TO 9-30-92

REGULATED FLOW 43,880 | GAL/DAY

Ideal Plating & Polishing Co.
681 Main Street P.O. Box 100
BELLEVILLE, NEW JERSEY 07109



We have no unregulated flow.

October 15, 1992

V. J. Eklund

Chemist

GARDEN STATE LABORATORIES, INC.

Bacteriological and Chemical Testing

410 Hillside Avenue
Hillside, NJ 07205

Telephone (908) 688-8900
Fax (908) 688-8966

MATHEW KLEIN, M.S., Director
HARVEY KLEIN, M.S., Lab Supervisor

REPORT OF ANALYSIS

REPORT # 920909270
CLIENT # IDE01
DATE SUBMITTED: 9/9/92

TO: Ideal Plating & Polishing Co.
681 Main Street
P.O. Box #100
Belleville NJ 07109
ATT: Mr. Elkind

SAMPLE TYPE: WATER
SAMPLE ID: 8 HR. COMPOSITE - EFFLUENT
SAMPLE LOCATION: @EXIT PIPE TO SEWER

DATE SAMPLED: 9/8/92 TIME SAMPLED:

ANALYSIS	RESULT	UNITS	
Lead	0.154	mg/l	
Copper	1.16	mg/l	
Chromium	<0.02	mg/l	
Nickel	0.38	mg/l	
Cadmium	<0.01	mg/l	
Zinc	0.07	mg/l	
Silver	0.80	mg/l	

< = less than, not detected.

Certified by U.S. Public Health Service, N.J. Dept. of Health and N.J.D.E.P.–Lab #20044

II 10

GARDEN STATE LABORATORIES, INC.

-b

Bacteriological and Chemical Testing
410 Hillside Avenue
Hillside, NJ 07205

Telephone (908) 688-8900
Fax (908) 688-8966

FOR LAB. USE ONLY
LAB #
RPT #
CLIENT #
CHG

CHAIN OF CUSTODY RECORD

PRESS HARD - USE BALL POINT PEN

NAME OF CLIENT IDEAL PLATING & POLISHING CO INC
ADDRESS 691 MAIN ST. (P.O. BOX 100)
CITY BELLEVILLE STATE NJ ZIP 07109
CONTACT TEL # (Day) 759-5559

DATE SUBMITTED 9-9-97
TIME SUBMITTED 3:45 P.M.

SAMPLE(S) TYPE EFFLUENT
SAMPLE(S) ID HEAVY METAL - F.
SAMPLE LOCATION EXIT PIPE TO SEWER

DATE SAMPLED 7-8-97 TIME SAMPLED 2HR COMP PRESERVED FRIDGE
IF SAMPLE(S) CONTAIN HAZARDOUS SUBSTANCES, CHECK HERE ☐ AND SPECIFY MINUTE
IF SAMPLE(S) REQUIRE SPECIAL QA/QC OR HANDLING, CHECK HERE ☐ AND SPECIFY

TESTS REQUESTED: ☐ ROUTINE (POTABLE WATER- T. COLI,S.P.C; NATURAL WATERS- F. COLI: FOODS-S.P.C., T. COLI, DM)

MICROBIOLOGY		WET CHEMISTRY				HEAVY METALS				ORGANICS			
STD. PLATE COUNT	☐	SDWA 2°	☐	CORROS.	☐	SDWA 1°	☐	EP TOX	☐	VOA	☐	A-280	☐
						PRIORITY POLLUTANTS	☐						
TOTAL COLIFORM	☐	BOD	☐	TSS	☐					THMs	☐	PEST	☐
FECAL COLIFORM	☐	COD	☐	TOC	☐	LEAD	☒	SODIUM	☐	HERB	☐	EP TOX	☐
FECAL STREP.	☐	PET HC	☐	OIL/GR.	☐	IRON	☐	MANG.	☐	BASE/NEUTRAL			☐
STAPH., C.P.	☐	TURB.	☐	NO3-N	☐	COPPER	☒	Cd	☒	ACID EXTRACTABLES			☐
SALMONELLA	☐	NO2-N	☐	NH3-N	☐	Cr	☒	Zn	☒	PCBs			☐
SHIGELLA	☐	TKN	☐	SO4	☐	Al	☐	ID #27	☐	ANALYSIS BY GC/MS			☐
LISTERIA	☐	T-PO4	☐	CN	☐	SLUDGE APPDX 007	☐			SLUDGE APPDX 009			☐
YEAST & MOLD	☐	Cl	☐	MBAS	☐	008	☐						
P. aeruginosa	☐	pH	☐	T. HARD.	☐								

OTHER TESTS/INSTRUCTIONS 7 metals
+ Ni, Fe, Al, Cu, Cr, Zn, Cd
+ Ionic conc. HNO3 pH

SUBMITTED BY: [signature]
RECEIVED BY: Patricia Leon

RELINQUISHED BY:
RECEIVED BY:

FOR LAB USE ONLY: SAM RECP
MICRO
CHEM

THE LIABILITY OF GARDEN STATE LABORATORIES, INC. FOR SERVICES RENDERED SHALL IN NO EVENT EXCEED THE AMOUNT OF THE INVOICE 1/91
Certified by U.S. Public Health Service, N.J. Dept of Health and N.J.D.E.P.-Lab # 20044

1-SAM RECP 2-MICRO 3-CHEM 4-CLIENT

III

ANALYTICAL TESTING LABORATORIES
Environmental Lab Division of The Plating Products Co., Inc.
NJDEP NO. 20477

840 COLFAX AVENUE, KENILWORTH, N.J. 07033
201-241-5040 • OUTSIDE N.J. 1-800-552-2888 • FAX 1-201-241-5356

FAX TRANSMISSION

Company: Ideal Plating FAX NO. 201-759-0277

Attention: Mr Vincent Ekland

No. Pages in Transmission:

If you do not receive all pages clearly, please call (201) 241-5040 for retransmission.

Subject: Analyses

II12

REPORT

ANALYTICAL
TESTING
LABORATORIES

840 COLFAX AVENUE . KENILWORTH, N.J. 07033 . 908-241-5040

NJDEP CERTIFIED WASTEWATER LABORATORY ID NUMBER 20477

Code No: 12538
Customer No:
Date Received: 10/14/92
Date Sent: 10/16/92
Sample Type:WASTEWATER

IDEAL PLATING AND POLISHING CO.
681 MAIN STREET
BELLEVILLE, N J 07109

ATT: Mr. Mr. Vincent Eklind

COMPONENT			ANALYSIS
10/14/92 EFFLUENT			
12538-3	CYANIDE, total	TCN	< 0.333 mg/l

NOTE: The customer voided all the remaining parameters on the the Chain-of-Custody by telephone on ~~10/17/92~~ 10/16/92

REMARKS:

John Liska
Lab Manager

II13

1253B

ANALYTICAL TESTING LABORATORIES

840 COLFAX AVENUE, P.O. BOX 368, KENILWORTH, N.J. 07033 • 908/241-5040
NJDEP ID. NO. 20477 FAX: 908/241-5356

CHAIN OF CUSTODY RECORD

INSTALLATION IDEAL PLATING AND POLISHING CO INC PLATING Corp SAMPLER (Signature)

SAMPLE NO.	SAMPLING POINT	DATE	TIME	SAMPLE GRAB/ COMP.	ANALYSIS CODE	NO. OF CONTAINERS	COMMENTS
#1B	EFFLUENT SAMPLER PT.	10-14-92	8:00AM	COMP.	BOD TSS	1	
#2B	EFFLUENT SAMPLER PT.	10-14-92	8:00AM	COMP.	7 HEAVY METALS	1	See Codes Below
#3B	NEAR EFFLUENT SAMPLER PT.	10-14-92	8:05AM	GRAB	TOTAL CN	1	CODE 17

Relinquished by: (Signature) W. J. Elbin — Received by: (Signature) — Date/Time 10/14/92 11:40

Relinquished by: (Signature) — Received by: (Signature) — Date/Time

Relinquished by: (Signature) — Received by: (Signature) — Date/Time

Dispatched by: (Signature) — Date — Time — Received for Laboratory by: — Date/Time

Method of Shipment:

ANALYSIS REQUIRED	CODE	ANALYSIS REQUIRED	CODE	ANALYSIS REQUIRED	CODE	ANALYSIS REQUIRED	CODE
Priority pollutant + 40	100	Copper	01	Lead	10	TSS	19
Petroleum hydrocarbon	120	Nickel	02	Zinc	11	Oil & Grease	20
Volatile Organics (scr)	130	Chrome (Total)	03	Cadmium	12	pH	21
Volatile Organics (GC/MS)	140	Chrome (Hex)	04	Silver	13	Phenol	22
Base Neutrals (GC/MS)	150	Arsenic	05	BOD	14	Other	23
Acids (GC/MS)	160	Mercury	06	COD	15		
PCB	170	Selenium	07	TKN	16		
PAH	180	Barium	08	Cyanide (Total)	17		
Pesticides/herbicides	190	Antimony	09	Cyanide (Amenable)	18		

II14

ATTACHMENT JJ

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 7-14-93

TIME

SITE NAME Ideal Plating

LOCATION Belleville

CALLER

PERSON CONTACTED Nancy Crispy PHONE NO. 633 7141

AFFILIATION Bureau Underground Storage Tanks (BUST)

SUMMARY OF CALL Regarding the registered tank # 0150077, Nancy said that the ø under "No. of tanks" column probably means that the tank is non-regulated. This was done early in the BUST program. The fact that the registration # is a 1986 # supports this theory. Otherwise, there is no obvious explanation for the "zero tanks".

SIGNATURE

4 4

RUN DATE: 03/02/92
RUN TIME: 15:40:52

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF UNDERGROUND STORAGE TANKS
REGISTERED UNDERGROUND STORAGE TANK FACILITIES

ESSEX COUNTY

UST NUMBER	FACILITY NAME/ OWNER NAME	FACILITY ADDRESS OWNER ADDRESS	ON-SITE MANAGER	TELEPHONE NUMBER	NO. OF TANKS
0154785	HOME MRS JAMES T WALDRON	86 ROSSMORE PL BELLEVILLE NJ 07109 86 ROSSMORE PL BELLEVILLE NJ 07109	SAME	(000) 000-0000	1
0150077	IDEAL PLATING AND PO RONALD KNIGGE	681 MAIN ST BELLEVILLE NJ 07109 681 MAIN BELLEVILLE NJ 07109	DEREK THOMPSON	(201) 759-5559	0
0173441	IMPERIAL APARTMENTS FRANK RANDOZZO & CAN	360 WASHINGTON AVE BELLEVILLE NJ 07109 276 HERBERT AVE HILLSIDE AVE NJ 07205	FRANK RANDAZZO	(201) 355-6308	1
0259329	J & M AUTO REPAIRING MICHAEL BARBONE & JE	3 HONISS ST BELLEVILLE NJ 07109 3 HONISS STREET BELLEVILLE NJ 07109	MICHAEL & JERRY	(201) 759-6592	1
0051239	JERRY*S SUNOCO MARK D. PUGLIESE	100 UNION AVE BELLEVILLE NJ 07109 100 UNION AVE BELLEVILLE NJ 07109	MARK D. PUGLIESE	(201) 759-9755	4
0214490	JOHN AUTO REPAIR PHYLLIS LUONGO	23 FRANKLIN STREET BELLEVILLE NJ 07109 23 FRANKLIN STREET BELLEVILLE NJ 07109	JOHN MANCHIO	(201) 759-1145	4
0231077	JOSEPH CALANDRIA APA JOSEPH CALANDRA	669 JORALEMON STREET BELLEVILLE NJ 07109 669 JORALEMON STREET BELLEVILLE NJ 07109	JOSEPH CALANDRA	(201) 751-4605	1
CO53651	KMART # 7177 KMART CORPORATION	371-411 MAIN ST BELLEVILLE NJ 07109 3100 W BIG BEAVER RD TROY MI 48084	JC RUTHRAUFF	(201) 751-3331	1
0143688	LA FERA CONTRACTING LA FERA CONTRACTING	3-57 MILL STREET BELLEVILLE NJ 07109 149 VERONA AVENUE NEWARK NJ 07104	FRANKLYN M. GROS	(201) 485-3500	2
0262451	LEONARD AND JUDITH R LEONARD AND JUDITH R	343 CORLANDT STREET BELLEVILLE NJ 07109 535 OTTO PLACE PARAMUS NJ 07652	LEONARD ROTHSTEI	(718) 768-3222	2
	LLOYD ENGINEERING CO	75 RUTGERS ST BELLEVILLE NJ 07109 75 RUTGERS ST BELLEVILLE NJ 07109	WILLIAM W BUSH	(201) 759-1900	1
	W BUSH	BELLEVILLE AVE BELLEVILLE NJ 07109	MICHAEL G LOMBAR	(201) 759-0016	4
0273459	NAN ASSOCIATES NAN ASSOCIATES	5225 GALLOWS ROAD FAIRFAX VA 22031 0001			
	NATIONAL LIGHTING CO NATIONAL LIGHTING CO	522 CORTLANDT ST BELLEVILLE NJ 07109 522 CORTLANDT ST BELLEVILLE NJ 07109			
0174116	NELLIE MINES NELLIE MINES	15 OVERLOOK AVE BELLEVILLE NJ 07109 15 OVERLOOK AVE BELLEVILLE NJ 07109	ARTHUR ROSS	(201) 751-1600	
0271263	NICOLETTE AUTOBODY W NICHOLAS NICOLETTE	177 PASSAIC AVE BELLEVILLE NJ 07109 177 PASSAIC AVE BELLEVILLE NJ 07109	ARTHUR ROSS	(201) 751-1600	
	PSE&G WORKS	26 MITCHELL ST BELLEVILLE NJ 07109			
		UNION AVE BELLEVILLE NJ 07109			

ATTACHMENT KK

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 5/18/93

TIME

SITE NAME Ideal Plating + Polishing

LOCATION Belleville

CALLER SODANO

PERSON CONTACTED Mr. Tom Mack PHONE NO. 201-817-5718

AFFILIATION Passaic Valley Sewerage Commissioners - Idustrial User Section

SUMMARY OF CALL Mr. Mack stated that a file exists on Ideal. Ideal was not a problem facility to the best of his recollection.

SIGNATURE

KK

ATTACHMENT LL

Wellsley Property Management, Inc. — manages the common area for 432 owners Inc.

Mary Quartarolo

Property Manager

The Commons
1 River Road
Nutley, New Jersey 07110

Tel.: (201) 661-0400
Fax: (201) 661-0012

Arbor Hills
432 OWNERS, INC. — owns the site
1 River Road
Nutley, N.J. 07110

ALEXANDER ~~XANTHOS~~
Rental Manager

Tel: 201-661-0402
Fax: 201-661-0012

LL

ATTACHMENT MM

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028

Scott A. Weiner
Commissioner

Karl J. Delaney
Director

September 14, 1992

Belleville Industrial Center
681 Main Street
Belleville, New Jersey 07109

RE: Ideal Plating & Polishing Company

Dear Sir or Madam:

The Department of Environmental Protection and Energy has developed a site discovery program initiative to identify sites in New Jersey that may have had uncontrolled releases of hazardous substances to the environment. Your property, Ideal Plating & Polishing Company, located at 681 Main Street in Belleville, Essex County, New Jersey (Block 56, Lot(s) 6) has been identified in the site discovery process as a suspected site based on the fact that hazardous substances were or are handled at your property. The purpose of this letter is to determine if your property requires preliminary assessment and if so, to inquire if you are interested in conducting a preliminary assessment of your site through participating in the Voluntary Cleanup Program. A description of the program and an application are attached for your information.

The first step in determining if there is or was a potential for a release is to complete the attached questionaire. If any of the questions are answered in the affirmative, the next step is to conduct a preliminary assessment. Procedures to conduct a preliminary assessment, which is a comprehensive review of files found at Federal, State and local government offices, are found in the proposed Technical Regulations, N.J.A.C. 7:26E.

If all of the questions are answered in the negative, the property will not require a preliminary assessment.

If an assessment is needed but you are not interested in participating in the Voluntary Cleanup Program at this time, your property will be prioritized on the Department's Comprehensive Site List and a preliminary assessment will be conducted using public funds. You could be held responsible for any expenditures incurred by the Department as well as subject to applicable enforcement actions if evidence of uncontrolled releases are found.

If you do not respond within 30 days of the date of this letter, the Department will assume that you do not wish to participate in the Voluntary Cleanup Program at this time.

Please contact Karen Schug of my staff at (609) 584-4280 if you have any questions.

Sincerely,

Linda Range

Linda Range
Section Supervisor
Bureau of Field Operations
Site Assessment Section

Enclosures

MM2

ATTACHMENT NN

IDEAL PLATING & POLISHING COMPANY

OCT 20 1992

Certified Mail
October 14, 1992

Ms. Linda Range
Section Supervisor
NJDEPE
Bureau of Field Operations
Site Assessment Section
CN028
Trenton, New Jersey 08625-0028

Subject: Voluntary Clean-Up Program
Reference: Your Letter and Attachments of September 14, 1992

Dear Ms. Range:

Ideal Plating and Polishing Company employs approximately 25 persons. Our plant carries out electroplating operations and falls under the industry category 40 CFR 313. The plant has a wastewater pretreatment operation and discharges its treated wastewater to the Passaic Valley Sewerage Commissioners' facility. Our business is very competitive and profit margins are at a minimum.

The plant has retained the services of an environmental consulting firm (Ramirez Associates of Far Hills, New Jersey) in order to properly operate within the NJDEPE statutes and regulations. Fortunately, as a result of these preventive safeguards, the plant has had no spills or illegal discharges to date. Based on the consultant's recommendations, prevention is our primary goal in avoiding environmental mishaps.

Our operating procedures mirror the best practices management outlined in the Code of the Federal Register 40 CFR. We have been in business for ten years and have not been cited for a violation of the environmental regulations during that period.

Unfortunately, our finances will not allow us to participate in the Voluntary Clean-Up Program. Our continuous meritorious environmental record

681 MAIN ST., P.O. BOX 100
BELLEVILE, N.J. 07109
(201) 759-5559
FAX 759-0277

NN1

does not seem to justify spending unavailable monies in looking for faults that we have expressly worked to prevent. Lastly, the search for a non-existent set of environmental conditions can sometimes proceed without end.

It is our opinion that a Voluntary Clean-Up Program is not justified for this site at this time.

If you have questions on this response, please feel free to call me.

Very truly yours,

Ronald F. Knigge
President

cc: Belleville Industrial Center

NN2

ATTACHMENT OO

DWR-138 M
6/89

New Jersey Department of Environmental Protection
Division of Water Resources

MONITORING WELL RECORD

Well Permit No. 26 - 233998
Atlas Sheet Coordinates 26 : 12 : 631

OWNER IDENTIFICATION - Owner BELVILLE INDUSTRIAL CENTER
Address 681 MAIN STREET
City BELLVILLE State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. B-2
County Municipality BELLEVILLE TOWN Lot No. 6 Block No. 56
Address

TYPE OF WELL (as per Well Permit Categories) BORING Date well completed 1/21/91
Regulatory Program Requiring Well Case I.D. #
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TECTONIC ENGINEERING Tele. # 914-928-6531

WELL CONSTRUCTION

Total depth drilled 20 ft.
Well finished to — ft.
Borehole diameter:
Top 6 in.
Bottom 6 in.
Well was finished: ☐ above grade ☐ flush mounted
If finished above grade, casing height (stick up) above land surface ____ ft.
Was steel protective casing installed? ☐ Yes ☑ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing				
Outer Casing (Not Protective Casing)				
Screen (Note slot size)				
Tail Piece				
Gravel Pack				
Annular Seal/Grout	0	20	6	PORTLAND CEMENT
Method of Grouting	TREMIE PIPE.			

Static water level after drilling NONE ft.
Water level was measured using ELECTRIC METER
Well was developed for — hours at — gpm
Method of development —
Was permanent pumping equipment installed? ☐ Yes ☑ No
Pump capacity — gpm
Pump type:
Drilling Method H.S.A
Drilling Fluid NONE Type of Rig CME-55
Name of Driller Terence Kendrick
Health and Safety Plan submitted? ☐ Yes ☑ No
Level of Protection used on site (circle one) None (D) C B A
N.J. License No. 1202
Name of Drilling Company KENDRICK DRILLING, INC.

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-3" ASPHALT
3"-5" CRUSHED STONE & SAND
8"-5' BROWN COARSE TO FINE SAND LITTLE SILT
5'-9'6" BROWN MED TO FINE SAND SOME SILT
9'6"-15' REDDISH BROWN MED TO FINE SAND LITTLE GRAVEL LITTLE SILT
15'-17' REDDISH BROWN COARSE TO FINE SAND SOME GRAVEL LITTLE SILT
17'- BROWN GRAY COARSE TO FINE SAND FOR WEATHERED SANDSTONE

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Terence Kendrick Date 2-3-91

COPIES: White & Green - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

001

DWR-138 M
6/89

New Jersey Department of Environmental Protection
Division of Water Resources

MONITORING WELL RECORD

Well Permit No. 26 - 23397
Atlas Sheet Coordinates 24 : 12 : 638

OWNER IDENTIFICATION - Owner BELVILLE INDUSTRIAL CENTER
Address 681 MAIN STREET
City BELLVILLE State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. B-1
County Municipality BELLEVILLE TOWN Lot No. 6 Block No. 56
Address

TYPE OF WELL (as per Well Permit Categories) MONITORING Date well completed 1/21/91
Regulatory Program Requiring Well Case I.D. #
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TECTONIC ENGINEERING Tele. # 914-928-6531

WELL CONSTRUCTION

Total depth drilled 25 ft.
Well finished to 25 ft.
Borehole diameter:
Top 6 in.
Bottom 6 in.
Well was finished: ☐ above grade ☐ flush mounted
If finished above grade, casing height (stick up) above land surface ____ ft.
Was steel protective casing installed? ☐ Yes ☑ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing				
Outer Casing (Not Protective Casing)				
Screen (Note slot size)				
Tail Piece				
Gravel Pack				
Annular Seal/Grout	0	25	6	PORTLAND CEMENT
Method of Grouting	TREMIE PIPE			

Static water level after drilling NONE ft.
Water level was measured using ELECTRIC METER.
Well was developed for / hours at / gpm
Method of development /
Was permanent pumping equipment installed? ☐ Yes ☑ No
Pump capacity / gpm
Pump type: /
Drilling Method H.S.A
Drilling Fluid NONE Type of Rig CME-55
Name of Driller Tenney Kendrick
Health and Safety Plan submitted? ☐ Yes ☑ No
Level of Protection used on site (circle one) None (D) C B A
N.J. License No. 1202
Name of Drilling Company KENDRICK DRILLING, INC.

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0 - 3"	ASPHALT
3" - 5'	BROWN SAND & CRUSHED STONE
5' - 19'	BROWN MED TO FINE SAND TRACE SILT & GRAVEL.
19' - 21'	REDDISH BROWN MED TO FINE SAND LITTLE SILT TRACE OF GRAVEL.
21' - 25'	REDDISH BROWN MED TO FINE SAND LITTLE SILT WITH RED SOFT SAND STONE

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Tenney Kendrick Date 2-3-91

COPIES: White & Green - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

002

ATTACHMENT PP

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO 2610100

APPLICATION NO

COUNTY Essex

26-12-628

WELL RECORD

TORING PURPOSES ONLY

Research Organic/Inorganic Chemical ADDRESS Belleville, New Jersey

Well No. MW01 SURFACE ELEVATION Feet (Above mean sea level)

ON Lot: 11 Block: 38

MPLETED 2/05/87 DRILLER EMPIRE SOILS INVESTIGATIONS, INC.

ER: Top 4 inches Bottom 4 inches TOTAL DEPTH 18.0 Feet

Type PVC Diameter 4 inches Length 8.0 Feet

Type PVC Size of Opening .010 Diameter 4 inches Length 10.0 Feet

in Depth { Top Feet / Bottom Feet Geologic Formation

ecs: Diameter inches Length Feet

LOWS NATURALLY Gallons per minute at Feet above surface

rises to Feet above surface

D OF TEST: Date Yield Gallons per minute

c water level before pumping Feet below surface

ping level feet below surface after hours pumping

wdown Feet Specific Capacity Gals. per min. per ft. of drawdown

pumped How measured

erved effect on nearby wells

ANENT PUMPING EQUIPMENT:

pe Mfrs. Name

pacity G.P.M. How Driven H.P. R.P.M.

pth of Pump in well Feet Depth of Footpiece in well Feet

pth of Air Line in well Feet Type of Meter on Pump Size Inches

D FOR AMOUNT { Average Gallons Daily / Maximum Gallons Daily

LITY OF WATER Sample: Yes No

sts Odor Color Temp. °F.

Are samples available?

(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)

URCE OF DATA

TA OBTAINED BY Walter Ketter #1316 Date February 13, 1987

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangement, etc.)

pp1

26.12.628

EMPIRE

FIELD LOG

DATE	TIME	DRILLED FROM	DRILLED TO	WEATHER	TEMP
2-5-87		0	18		

HOLE NO. MW01

GRD. ELEV.

86-10100

PROJECT

LOCATION

Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA	WELL DETAILS
0-2	1	3	5	5	6		M		11	Fill Red Br S.Lty Clay		
2-4	2	3	3	2	4		M		24	Fill Red Br S.Lty Clay		
4-6	3	4	4	4	3		M		20	Red Br F-m Sand Silty		
6-8	4	8	12	35	20		M		24	Rd Br F-m Sand Silty		
8-10	5	7	11	11	10		W		24	Br-gray Br F. Sand		

water at 9 Ft

DRILLERS CLASSIFICATION

Logged (C.)

NOTATION: SIZE AUGERS/CASING 6"/4 SIZE SPOON 2in

SIZE THIN-WALLED TUBE n/a SIZE CORE n/a

N = NO. OF BLOWS TO DRIVE "SPOON "WITH LB. WEIGHT FALLING PER BLOW

C = NO. OF BLOWS TO DRIVE "CASING "WITH LB. WEIGHT FALLING PER BLOW

FILL OUT BACK OF LOG AND SIGN YOUR NAME

pp 2

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO. 2610101
APPLICATION NO. ____
COUNTY Essex

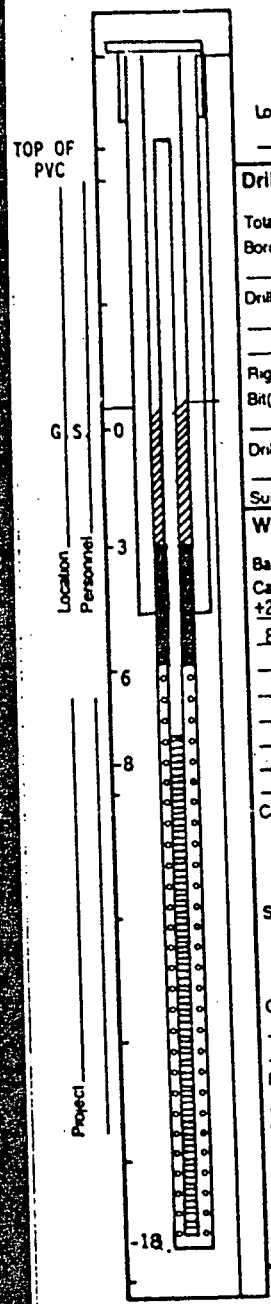
FOR MONITORING PURPOSES ONLY

26-12-628

WELL RECORD

1. OWNER Research Organic/Inorganic Chemical ADDRESS Belleville, New Jersey
   Owner's Well No. MW22 SURFACE ELEVATION ____ Feet (Above mean sea level)
2. LOCATION Lot: 11 Block: 38
3. DATE COMPLETED 2/05/87 DRILLER EMPIRE SOILS INVESTIGATIONS, INC.
4. DIAMETER: Top 4 inches Bottom 4 inches TOTAL DEPTH 13.5 Feet
5. CASING: Type PVC Diameter 4 Inches Length 3.5 Feet
6. SCREEN: Type PVC Size of Opening .010 Diameter 4 Inches Length 10.0 Feet
   Range in Depth { Top ____ Feet / Bottom ____ Feet Geologic Formation ____
   Tail Piece: Diameter ____ Inches Length ____ Feet
7. WELL FLOWS NATURALLY ____ Gallons per minute at ____ Feet above surface
   Water rises to ____ Feet above surface
8. RECORD OF TEST: Date ____ Yield ____ Gallons per minute
   Static water level before pumping ____ Feet below surface
   Pumping level ____ feet below surface after ____ hours pumping
   Drawdown ____ Feet Specific Capacity ____ Gals. per min. per ft. of drawdown
   How pumped ____ How measured ____
   Observed effect on nearby wells ____
9. PERMANENT PUMPING EQUIPMENT:
   Type ____ Mfrs. Name ____
   Capacity ____ G.P.M. How Driven ____ H.P. ____ R.P.M. ____
   Depth of Pump in well ____ Feet Depth of Footpiece in well ____ Feet
   Depth of Air Line in well ____ Feet Type of Meter on Pump ____ Size ____ Inches
10. USED FOR ____ AMOUNT { Average ____ Gallons Daily / Maximum ____ Gallons Daily
11. QUALITY OF WATER ____ Sample: Yes ____ No ____
    Taste ____ Odor ____ Color ____ Temp. ____ °F.
12. LOG ____ Are samples available? ____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA ____
14. DATA OBTAINED BY Walter Ketter #1316 Date February 13, 1987

NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)



Well MW-01

Well Construction Summary

Permit #2610100 26-12-628

Location or Coords: See Figure 3-3

Elevation, Ground Level 9.28 ft asl

Top of Casing 12.04 ft asl

Drilling Summary:

Total Depth 13 ft bgs.
Borehole Diameter 10 inches
Driller Empire Soils Investigations
Walter Ketter
Rig 45 C CME
Bit(s) 6.25 in Auger Bit
Drilling Fluid NONE
Surface Casing ____

Well Design:

Basis: Geologic Log X Geophysical Log ____
Casing String(s): C = Casing S = Screen

+2.0	8.0'	C1	____	____	____
8.0	18.0	S1	____	____	____

Casing C1 Schedule 40 PVC. 4 in ID
C2 ____
Screen S1 Schedule 40 PVC 0.01" continuous slot (Johnson), 4 in ID
S2 ____
Centralizers ____
Filter Material Clean coarse sand to fine gravel (8'-18')
Cement Portland II grout (0-3')
Other Protective casing - 5 ft., steel with lockable cap. Bentonite seal -granular bentonite slurry. (3'-6')

Construction Time Log: 1987

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	2/5	10:00	2/5	11:00
Geophys Logging	____	____	____	____
Casing Well Components	2/5	11:00	2/5	11:30
Filter Placement	2/5	11:30	2/5	12:00
Cementing	2/6	9:00	2/6	10:00
Development	2/9	____	2/9	____
Other	____	____	____	____

Well Development:

Well pumped for approximately one (1) hour at 10-12 gpm with surface pump.

Comments:

WESTON

LUTZ ENVIRONMENTAL CO., INC.

2020 CLINTON STREET • LINDEN, NEW JERSEY 07036 • (908)862-8888

BORING LOG:

WELL NO. MW #3 COORDINATE NO. 26-12-6[illegible]23 PERMIT NO. 26-21893

DATE DRILLED 9-12-90 COUNTY ESSEX USE MONITOR

LOCATION HARDMAN INC. 600 CORTLAND ST & GREYLOCK AVE BELLEVILLE NJ

OWNER CORTLAND ST. ASSOC. ADDRESS CORTLAND ST & GREYLOCK AVE BELLEVILLE NJ

DRILLING METHOD AIR ROTARY SAMPLING METHOD COMPOSITE

HOLE DIA. TOP → 12" BOTTOM → 6" TOTAL DEPTH 54.0'

CASING:

TYPE 6" BLACK THREADED WELL CASING SLOT — DIA 6" LENGTH 34.0'

SCREEN:

TYPE N/A SLOT — DIA — LENGTH —

GRAVEL PACK SIZE N/A CASING SEAL NEAT CEMENT

STATIC WATER LEVEL APPROX. 39.0' GEOLOGIC FORMATION CONSOLIDATED - SHALES.

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	8" STEEL MANHOLE w/ 3'x2' CONCRETE PAD — IDENTIFICATION OF SOILS/REMARKS
0-6"			34.0' of 6" BLACK THREADED WELL CASING	3"-6" → ASPHALT AND BLUE STONE.
6"-11'			GROUT	6"-11' → BROWN SILTY SANDS.
11'-24'			GROUT	11'-24' → RED BROWN F-M SANDS w/ some SILTS.
24'-34.0'				24'-34.0' → RED SHALE
34'-39.5'			20' of OPEN HOLE	34.0'-39.5' — HARD RED SHALES.
39.5'-41.0'				39.5'-41.0' — SOFT Red SHALES.
41.0'-44.5'				41.0'-44.5' — HARD RED SHALES.
44.5'-49.5'				44.5'-49.5' — Soft Red SHALE.
49.5'-54.0'				49.5'-54.0' — HARD Red SHALES.
				T.D. 54.0

pp3

Form DWR-138
1/80

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

Coord: 2612389

PERMIT NO. 26-8379

APPLICATION NO. _____

COUNTY Essex

WELL RECORD

1. OWNER VAN NESS PLASTIC MOLDING CO. ADDRESS 555 CORTLANDT SST.
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Lot: 22 Block: 98 Municipality: Belleville Town
3. DATE COMPLETED May 29,1986 DRILLER William H. Beatty
4. DIAMETER: Top 10 inches Bottom 6 inches TOTAL DEPTH 300 Feet
5. CASING: Type steel Diameter 6 Inches Length 50 Feet
6. SCREEN: Type _____ Size of Opening _____ Diameter _____ Inches Length _____ Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet Geologic Formation _____
   Tail Piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date May 30,1986 Yield 50+ Gallons per minute
   Static water level before pumping 20 Feet below surface
   Pumping level 100 feet below surface after 2 hours pumping
   Drawdown 80 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How pumped airlift How measured 5 gal container & watch
   Observed effect on nearby wells none
9. PERMANENT PUMPING EQUIPMENT: done by others
   Type _____ Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR cooling AMOUNT { Average NA Gallons Daily / Maximum _____ Gallons Daily
11. QUALITY OF WATER [illegible] Sample: Yes ____ No ____
    Taste _____ Odor _____ Color _____ Temp. _____ °F.
12. LOG 0-40': overburden. 40'-300': red shale and sandstone Are samples available? _____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA Well driller's log
14. DATA OBTAINED BY William Beatty Jr. Date June 17,1986

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

pp4

26-12-38

PP5

SUMMIT DRILLING CO., INC.

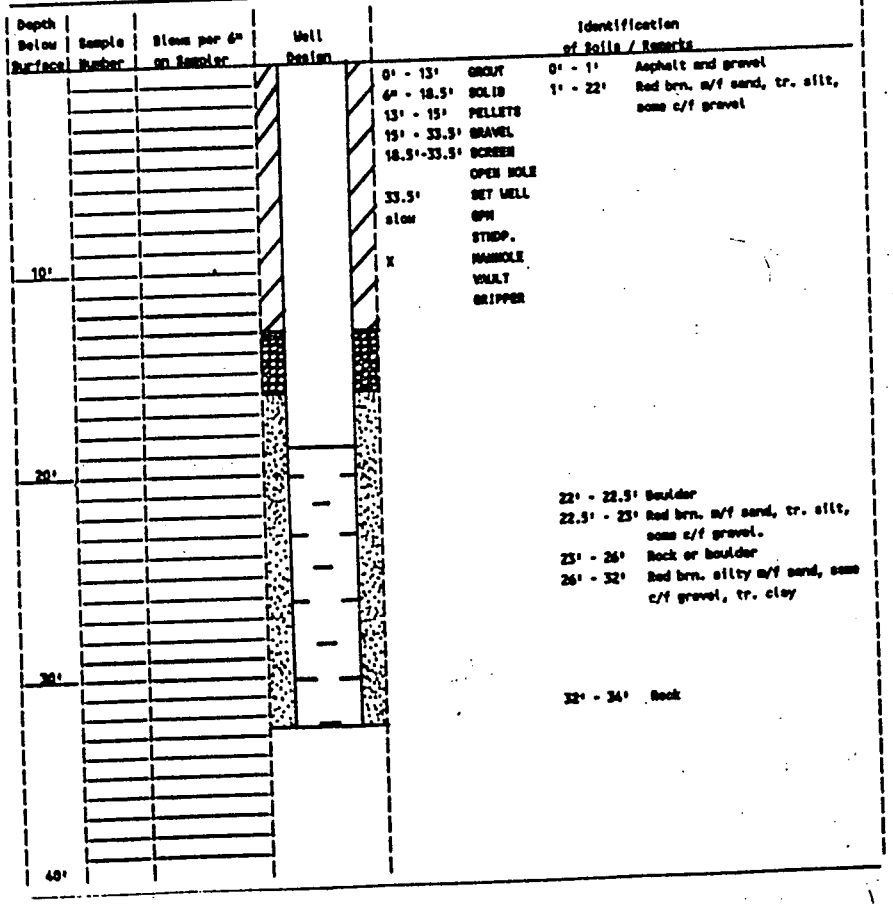
ENVIRONMENTAL SPECIALISTS

400 Union Avenue
Bridgewater, NJ 08807
Telephone: (908) 722-4266
Toll Free: (800) 343-4648
FAX: (908) 356-1009

2546D Morningside Dr.
West Columbia, SC 29169
Telephone: (803) 739-9803
Toll Free: (800) 342-4648
FAX: (803) 796-9698

WELL LOG

Well No. MW - 1 — Coordinate No. 26.12.427 — Permit No. 26-27666
Date Drilled 12/17/91 — County Essex — Use Monitor
Location Ronnie's Service Station, 605 Washington Avenue, Belleville, New Jersey
Owner Star Enterprise, 303 Fellowship Road, Moorestown, New Jersey 08057
Drilling Method Air — Sampling Method from cuttings
Hole Diameter 8" — Total Depth 33.5'
Casing: Type PVC — Diameter 4" — Length 18'
Screen: Type PVC — Slot .020 — Diameter 4" — Length 15'
Gravel Pack Size Mocie #2 — Casing Seal Portland and Pellets
Static Water Level 26' — Geologic Formation



Identification of Soils / Remarks

0' - 1' Asphalt and gravel
1' - 22' Red brn. m/f sand, tr. silt, some c/f gravel

22' - 22.5' Boulder
22.5' - 23' Red brn. m/f sand, tr. silt, some c/f gravel.
23' - 26' Rock or boulder
26' - 32' Red brn. silty m/f sand, some c/f gravel, tr. clay

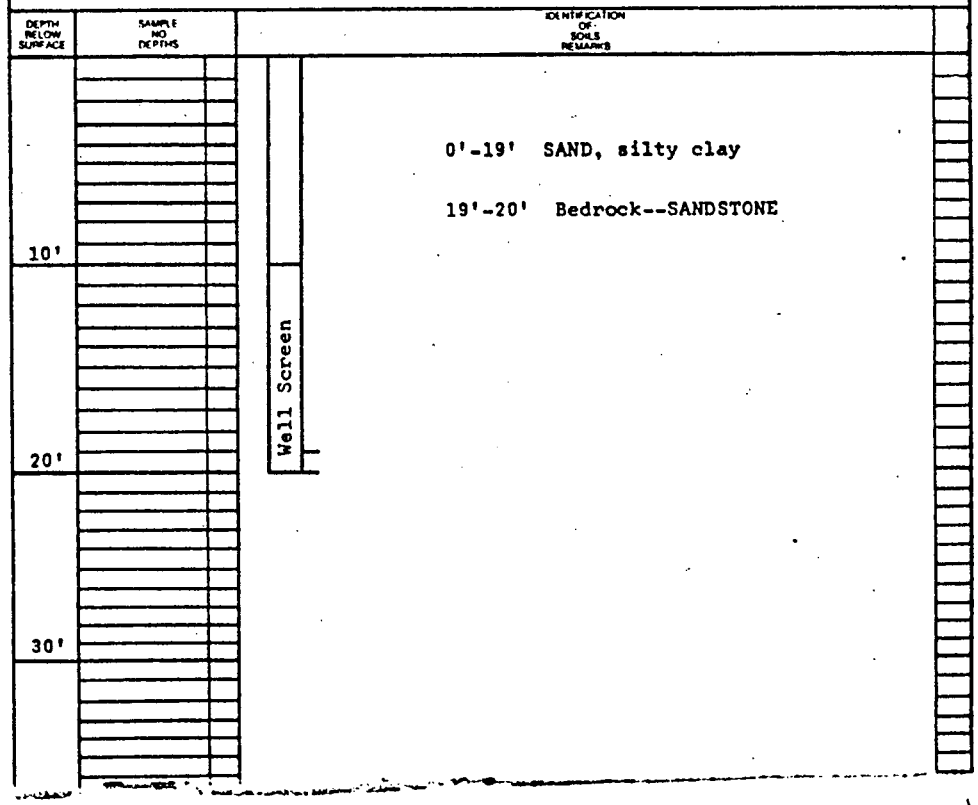
32' - 34' Rock

PROJECT TEXACO
WELL NO. 5
DATE DRILLED May 18, 1982
STATIC WATER LEVEL

Lawler, Matusky & Skelly Engineers Corp.
703 Giralda Drive
Moorestown, New Jersey 07751
(201) 596-8500

PERMIT NO. 26-5694
APPLICATION NO.
COUNTY Essex
USE monitor

LOCATION 605 North Washington Avenue, Belleville, New Jersey
OWNER TEXACO, Inc. — ADDRESS 910 Delancy Street, Newark, NJ
DRILLING METHOD air rotary — SAMPLING METHOD cuttings
DIAMETER: Top ____ Bottom ____ Inches — TOTAL DEPTH 20' Feet
CASING: Type PVC — Diameter 4 Inches — Length 10' Feet
SCREEN: Type PVC — Size of Opening 0.020 — Diameter 4 Inches — Length 10' Feet
GRAVEL PACK Yes X No ____ — GRAVEL SIZE #1
SANITARY SEAL Yes X No ____ — TYPE bentonite — GEOLOGIC FRM



26.12.38b

CT TEXACO
NO. 4
DRILLED May 18, 1982
WATER LEVEL
TION 605 North Washington Avenue, Belleville, New Jersey
R TEXACO, Inc ADDRESS 910 Delancy Street, Newark, NJ
ING METHOD air rotary SAMPLING METHOD cuttings
ETER: Top Bottom Inches TOTAL DEPTH 20' Feet
IG: Type PVC Diameter 4 Inches Length 10' Feet
EN: Type PVC Size of Opening 0.020 Diameter 4 Inches Length 10' Feet
EL PACK Yes X No GRAVEL SIZE #1
TARY SEAL Yes X No TYPE bentonite GEOLOGIC FRM

FINDEX Corp.
703 Ginnel Drive
Morrisville, New Jersey 07751
(201) 536-8500

PERMIT NO. 26-5626
APPLICATION NO.
COUNTY Essex
USE monitor

SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS
	0'-18' SAND, silty clay
	18'-20' Bedrock--SANDSTONE

Well Screen

26.12.38b

PROJECT TEXACO
WELL NO. 3
DATE DRILLED May 18, 1982
STATIC WATER LEVEL
LOCATION 605 North Washington Avenue, Belleville, New Jersey
OWNER TEXACO, Inc. ADDRESS 910 Delancy Street, Newark, NJ
DRILLING METHOD air rotary SAMPLING METHOD cuttings
DIAMETER: Top Bottom Inches TOTAL DEPTH 15' Feet
CASING: Type PVC Diameter 4 Inches Length 5' Feet
SCREEN: Type PVC Size of Opening 0.020 Diameter 4 Inches Length 10' Feet
GRAVEL PACK Yes X No GRAVEL SIZE #1
SANITARY SEAL Yes X No TYPE bentonite GEOLOGIC FRM

FINDEX Corp.
703 Ginnel Drive
Morrisville, New Jersey 07751
(201) 536-8500

PERMIT NO. 26-5624
APPLICATION NO.
COUNTY Essex
USE monitor

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS
		0'-9'6" SAND, silty clay
10'		9'6"-15' Bedrock--SANDSTONE
20'		
30'		

Well Screen

pg 7

26-12-38

PROJECT TEXACO
WELL NO. 1
DATE DRILLED May 17, 1982
STATIC WATER LEVEL
LOCATION 605 North Washington Avenue, Belleville, New Jersey
OWNER TEXACO, Inc.
DRILLING METHOD air rotary
DIAMETER: Top Bottom Inches
CASING: Type PVC
SCREEN: Type PVC Size of Opening 0.020
GRAVEL PACK Yes X No
SANITARY SEAL Yes X No

TANDEX Corp. 703 Ginesi Drive Morganville, New Jersey 07751

PERMIT NO. 26-5622
APPLICATION NO.
COUNTY Essex
USE monitor
ADDRESS 910 Delancy Street, Newark, NJ
SAMPLING METHOD cuttings
TOTAL DEPTH 15' Feet
Diameter 4 Inches Length 5' Feet
Diameter 4 Inches Length 10' Feet
GRAVEL SIZE #1
TYPE bentonite GEOLOGIC FRM

RONNIES FOR TEXACO
Greyloch + Wash.

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS
		0'-9'6" SAND, silt, clay
		9'6"-15' Bedrock--SANDSTONE
10'		Well Screen
20'		
30'		

26-12-386

PROJECT TEXACO
WELL NO. 2
DATE DRILLED May 18, 1982
STATIC WATER LEVEL
LOCATION 605 North Washington Avenue, Belleville, New Jersey
OWNER TEXACO, Inc.
DRILLING METHOD air rotary
DIAMETER: Top Bottom Inches
CASING: Type PVC
SCREEN: Type PVC Size of Opening 0.020
GRAVEL PACK Yes X No
SANITARY SEAL Yes X No

TANDEX Corp. 703 Ginesi Drive Morganville, New Jersey 07751 (201) 536-8500

PERMIT NO. 26-5623
APPLICATION NO.
COUNTY Essex
USE monitor
ADDRESS 910 Delancy Street, Newark, NJ
SAMPLING METHOD cuttings
TOTAL DEPTH 15' Feet
Diameter 4 Inches Length 5' Feet
Diameter 4 Inches Length 10' Feet
GRAVEL SIZE #1
TYPE bentonite GEOLOGIC FRM

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS
		0'-7'6" SAND, silty clay
		7'6"-15' Bedrock--SANDSTONE
10'		Well Screen
20'		
30'		

WESTON

26.12.628
26-10099-
26-10101

5 May 1987

Summary of Well Installation Procedures for Phase I Investigation at the Research Organic and Inorganic Chemical Corporation Site, Belleville, New Jersey.

The following description of activities outlines the procedures and materials used in the installation of the monitor wells MW-01, MW-02 and MW-03 at the Research Organic and Inorganic Chemical Corporation (ROC/RIC) Site in Belleville, New Jersey. The wells were installed between 5 and 6 February, 1987.

Prior to the installation of each well, the drilling equipment and well materials used were decontaminated as described in the Field Sampling Plan.

The depths of the monitor wells ranged from 13.5 to 18.0 feet below ground surface and were installed using 6.25-inch ID hollow stem augers producing a 10-inch borehole diameter. No drilling fluids were used during the drilling of the wells. All the monitor wells were constructed of 4-inch diameter Schedule 40 PVC casing and screen. The 10-foot screen section was continuous wound with 0.01-inch slot. A PVC cap was set at the bottom of the well screen, and the

PP8

26.12.628
26-10099-
26-10101

WESTON

joints of all the casings were threaded. No solvents were used as jointing compounds.

Once the desired depth was reached with the augers, the well screen and riser pipe was placed inside the augers. The bottom of the well screen was positioned approximately 7 to 9 feet below the water table. As the augers were gradually removed from the borehole, the annular space around the screen was filled with a clean uniform gravel pack to approximately one to two feet above the top of the screen. When plumbing the hole indicated that the sand pack was at the desired level, a one- to three-foot thick granular bentonite slurry seal was emplaced on the sand pack. The bentonite slurry was mixed at a ratio of 1.5 pounds of granular bentonite per one gallon of water. After the bentonite seal was emplaced, the remaining annular space was grouted with a Portland cement/bentonite mixture to ground surface. A 5-foot long, 6-inch ID protective steel casing with a lockable cap was then installed approximately three feet into the grout seal at each well. Upon completion of well installation and grout hardening, a 2.5 foot square by 4-inch thick concrete pad was constructed around each monitor well.

The completed monitor wells were developed using a surface pump. Development of the wells continued for a minimum of

WESTON

26.12.628
86-10099 -
26-1010 /

one hour that yielded discharge that was relatively clear and free of sand. The pump hose was initially set at the bottom of the well, then later moved towards the top of the screen to ensure water was drawn through all portions of the screen.

pg9

Form Dlvm. 138
11/80

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO. 2610099
APPLICATION NO ____
COUNTY Essex

26-12-628

FOR MONITORING PURPOSES ONLY

WELL RECORD

Little + Main

1. OWNER Research Organic/Inorganic Chemical ADDRESS Belleville, New Jersey
   Owner's Well No. MW03 SURFACE ELEVATION ____ Feet (Above mean sea level)
2. LOCATION Lot: 11 Block: 38
3. DATE COMPLETED 2/06/87 DRILLER EMPIRE SOILS INVESTIGATIONS, INC.
4. DIAMETER: Top 4 inches Bottom 4 inches TOTAL DEPTH 17.0 Feet
5. CASING: Type PVC Diameter 4 inches Length 7.0 Feet
6. SCREEN: Type PVC Size of Opening .010 Diameter 4 inches Length 10.0 Feet
   Range in Depth { Top ____ Feet / Bottom ____ Feet Geologic Formation ____
   Tail Piece: Diameter ____ Inches Length ____ Feet
7. WELL FLOWS NATURALLY ____ Gallons per minute at ____ Feet above surface
   Water rises to ____ Feet above surface
8. RECORD OF TEST: Date ____ Yield ____ Gallons per minute
   Static water level before pumping ____ Feet below surface
   Pumping level ____ feet below surface after ____ hours pumping
   Drawdown ____ Feet Specific Capacity ____ Gals. per min. per ft. of drawdown
   How pumped ____ How measured ____
   Observed effect on nearby wells ____
9. PERMANENT PUMPING EQUIPMENT:
   Type ____ Mfrs. Name ____
   Capacity ____ G.P.M. How Driven ____ H.P. ____ R.P.M. ____
   Depth of Pump in well ____ Feet Depth of Footpiece in well ____ Feet
   Depth of Air Line in well ____ Feet Type of Meter on Pump ____ Size ____ Inches
10. USED FOR ____ AMOUNT { Average ____ Gallons Daily / Maximum ____ Gallons Daily
11. QUALITY OF WATER ____ Sample: Yes ____ No ____
    Taste ____ Odor ____ Color ____ Temp. ____ °F.
12. LOG ____ Are samples available? ____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA ____
14. DATA OBTAINED BY Walter Ketter #1316 Date February 13, 1987

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

pg 1 of 2

26-12-628

ATE	TIME	DRILLED FROM	DRILLED TO	WEATHER	TEMP
6-87		0	17		

EMPIRE SOIL INVESTIGATIONS, INC.

FIELD LOG

HOLE NO. MW-3

GRD. ELEV.

26-10099

PROJECT

LOCATION

Sheet 1 of 1

DEPTH OF SAMPLE	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOWS ON CASING C	MOISTURE	COLOR	SAMPLE RECOVERY	CLASSIFICATION OF MATERIALS DRILLED	OTHER DATA	WELL DETAILS
2	1	14	17				M		20	Red Br clay Tr F sand F:11		
4	2	2	1	1	2		M		24	Red Br Silty Clay natural.		
6	3	2	2	1	1		M		24	Red Br Silty Clay		
8	4	2	2	2	3		M		24	Red Br Silty clay at 7 ft change to F sand		
				1	1					Water at 7 Ft		

DRILLERS CLASSIFICATION

Level C

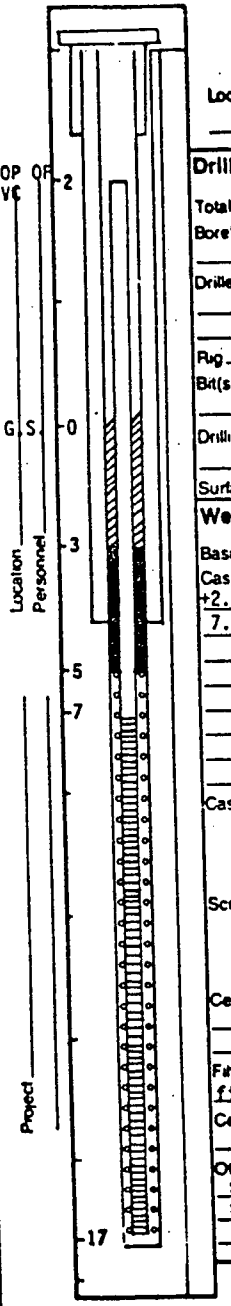
NOTATION: SIZE AUGERS / CASING 6¼ SIZE SPOON 2 in

SIZE THIN-WALLED TUBE SIZE CORE

N = NO. OF BLOWS TO DRIVE "SPOON "WITH lb. WEIGHT FALLING PER BLOW

C = NO. OF BLOWS TO DRIVE "CASING "WITH lb. WEIGHT FALLING PER BLOW

FILL OUT BACK OF LOG AND SIGN YOUR NAME



Well MW-03
Permit #2610099

Well Construction Summary 26-12-628

Location or Coords See Figure 3-3

Elevation Ground Level 8.79 ft asl

Top of Casing 10.72 ft asl

Drilling Summary:

Total Depth 17 ft b.g.s.

Borehole Diameter 10 inches

Driller Empire Soil Investigations
Walter Ketter

Rig 45c CME

Bit(s) 6.25 in Auger Bit

Drilling Fluid NONE

Surface Casing NONE

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s) C = Casing S = Screen

+2.0'	7.0'	C1			
7.0'	17.0'	S1			

Casing C1 Schedule 40 PVC, 4 in ID

C2

Screen S1 Schedule 40 PVC, 0.01 in continuous slot (Johnson)

S2 4 in ID

Centralizers

Filter Material Clean coarse sand to fine gravel (5'-17')

Cement Portland II grout (0-3')

Other Protective casing - 5 ft. steel with lockable cap. Bentonite seal - granular bentonite slurry. (3'-5')

Construction Time Log: 1987

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	2/6	11:00	2/6	12:00
Geophys Logging				
Casing Well Components	2/6	12:00	2/6	12:30
Filter Placement	2/6	12:30	2/6	13:00
Cementing	2/6	13:00	2/6	14:00
Development	2/9		2/9	
Other				

Well Development:

Well pumped for approximately one hour at 10-12 gpm with surface pump.

Comments:

WESTON

ATTACHMENT QQ

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8-4-93

TIME _____

SITE NAME Ideal Plating + Polishing

LOCATION Belleville

CALLER SODANO

PERSON CONTACTED Ethyl Senst PHONE NO. 201-340-4300

AFFILIATION Laboratory Representative - Passaic Valley Water Com

SUMMARY OF CALL Passaic Valley Water Commission is jointly owned by Passaic, Clifton and Paterson. Its water is solely from the Passaic River and Wanaque Reservoir. PVWC serves approx. 785,000 people in the noted ~~towns~~.

M Sodano
SIGNATURE

QQ1

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 7/28/93

TIME

SITE NAME Ideal Plating

LOCATION Belleville

CALLER SODANO

PERSON CONTACTED Anthony Debarros PHONE NO. 201-256-4965

AFFILIATION Principal Engineer of Hydraulics - Newark Water

SUMMARY OF CALL Mr Debarros stated that Newark Water has a contract, with Belleville to supply 100% of their (Belleville) water. Newark's water comes from the Pequannock system of reservoirs.

M Sodano
SIGNATURE

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

207

DATE 7-28-93

TIME

SITE NAME Ideal Plating

LOCATION Belleville

CALLER

PERSON CONTACTED Camille Domenick PHONE NO. 201 450 3389

AFFILIATION Inspector - Belleville Board of Health

SUMMARY OF CALL Yes, to the best of Ms. Knowled Belleville's water, is entirely supplied by Newark. Some parts of Belleville's residents actually pa directly to Newark.

Regarding Belleville Industrial Center and Ideal Plating, she has files. Ideal has a 3-90 NOV for reporting requirements of PVS and a 9-84 N.O.P. compliance report.

M Sodano
SIGNATURE

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8-3-93

TIME

SITE NAME Ideal Plating and Polishing

LOCATION Belleville

CALLER SODANO

PERSON CONTACTED Mr. Peter Donahue PHONE NO 201-429 6975

AFFILIATION Mountainside Hospital

SUMMARY OF CALL Mr. Donahue is Director of Engineering for Mountainside. Last analytical was Spring 1993 and value 0.016 ppm Trichloroethylene, but the SDWA limit is 1 ppm so the hospital continues to use the wellwater. Trichloroethylene is the only VOC which shows up. Metals are not a problem. Mr. Donahue says that the system serves about 4800 people. The well is 350' deep.

tetrachloroethylene 1.9 ppm showed up one time.

SIGNATURE

QQ3

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8-4-93

TIME

SITE NAME Ideal Plating + Polishing

LOCATION Belleville

CALLER SUDANO

PERSON CONTACTED Robert Siery PHONE NO. 201-777-1726

AFFILIATION Superintendent of Public Works - Wallington

SUMMARY OF CALL All 5 wells in Wallington were shut down between 1979 and 1987 due to Trichloroethylene contamination (and tetra chloroethylene). There is allegations that Curtis Wright may be a source as well as a nearby Superfund site. Population is served by Passaic Valley Water Commission. 14,000 people served in Wallington.

M Sudano

SIGNATURE

QQ4

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8/4/93

TIME

SITE NAME Ideal Plating

LOCATION Belleville

CALLER

PERSON CONTACTED Barbara McLaren PHONE NO. 201-680-4009

AFFILIATION Assist. Engineer - Bloomfield.

SUMMARY OF CALL Bloomfield Health Dept. Rick Proctor Health officer 1-201-680-4024. Not in today

~~Water Department 680-4009~~

Water Engineering 680-4009

Mr. Coppola + Anthony Marucci - town engineers were not in, however, Barbara McLaren, Assist. Engineer confirmed the following: Bloomfield does not use its well for 10 years since it had aesthetic problems. Bloomfield buys its water from Newark. There are no consumption wells in Bloomfield

Nick Sodano
SIGNATURE

QQ5

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8-4-93

TIME _____

SITE NAME Ideal Plating + Polish

LOCATION _____

CALLER SODANO

PERSON CONTACTED Mr. Modine PHONE NO. 1-201-748-8444

AFFILIATION Glen Ridge Public Works - Borough Enginee

SUMMARY OF CALL Only operational well is on Mountain side Hospital property - The Glen Ridge well is not operational, but diversion permit is active. All borough potable water comes from Monclair. But Mountainside has ther own water supply (not connected). The Glen Ridge well was impacte by Trichloroethylene after construction preject Source is not known, but its the same contaminant as Mont-clair. Per Mr Modine, Mountainside is impacted but below standards Round #3 for Glen Ridge service populatic is 7,500 people. Glen Ridge has considered air stripping but wants to combine treatment works with Mountainside.

M Sodano
SIGNATURE

QQ6

BUREAU OF SITE ASSESSMENT

REPORT OF PHONE CALL

DATE 8-4-93

TIME

SITE NAME Ideal Plating + Polishing

LOCATION Belleville

CALLER SODANO

PERSON CONTACTED John Stevens PHONE NO. 201-744-4600

AFFILIATION Superintendent of Operations - Montclair Wate

SUMMARY OF CALL Montclair has wells impacted by VOC's. 2 of the 3 wells owned by Montcla are within 4 miles of Ideal. Per Mr. Steven A280 bi annual VOC monitoring of Montclair water demonstrates that it is acceptable for VOC after air stripping. Mr. Stevens said there wa no problem with metals in water. There were 38,000 people served by Montclair water in Monclair in 1981. However Montclair also sells water to Glen Ridge, to West Orange (VIA N.J.A.W.C.) and to Passaic Valley Water Commis per Stevens.
The source of the VOC contamination is unknow per Stevens.

3404300

SIGNATURE

Per Stevens the sale to PVWC is for a direct connectic to Clifton. Montclair sells 2.1 million gal. per month (which serves about 6500 people). The sale to New J. AWC is for .77 million gallons to Little Falls.

QQ7